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SYMPOSIUM ON SYPHILIS IN ITS ECONOMIC ASPECTS

HANDLING OF THE VENEREAL PROBLEM IN UNITED STATES ARMY IN THE PRESENT CRISIS*

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If we could handle venereal diseases as we can other infectious diseases they would offer a relatively simple sanitary problem. We know all of the facts necessary for their sanitary control. We know their causes, their incubation periods, and their modes of transmission; and these facts so far as they are physical facts offer no practical obstacles to sanitary control. But for all that some sanitarians may say, the venereal diseases cannot be handled simply as a sanitary problem. No effective policy is practicable which would isolate them like measles or scarlet fever; or quarantine them like smallpox; or, even in the present state of sentiment, get them successfully reported. They involve factors peculiar to themselves—social, personal and moral factors that reach into the most insistent and secret impulses of life. These facts make the problem of their control extremely difficult; make it a social as well as a sanitary problem and, without question, the most complex and difficult of social problems.

The Army program has taken full cognizance of both phases of this problem. It can readily be seen that they require very different treatment, and that in coordinating the forces necessary to attack them in a practical campaign, there may be need for tact, judgment, tolerance and sympathetic cooperation. In this attempt the dangers are many of cross purposes, of exaggeration of the importance of one part of the program over the other, of irreconcilable conflicts between radicals on the two sides, especially of having the moral propaganda run away with the medical. We all know to what extremes the sexual moralist can go. How unpractical, how intolerant, how extravagant, even how unreasoning, if not scientifically dishonest, he can be. On the other hand, the medical man can make no boasts of the cool, dispassionate, scientific intelligence that he has brought to bear on the problem. He is usually an infant in the knowledge of the epidemiologic facts of the venereal diseases and of the work that has been done on them as a sanitary problem. If he does not content himself with a mild mistrust of social and moral propagandas for influencing their prevalence, he is apt to have opinions about what he fondly regards as the practical aspects of the sexual problem, which are not the less vigorous because he has given very little serious study to the subject.

A very practical proposition has been to avoid the danger of being carried away by extremes in policy in either direction. Up to the present time, however, this danger has not actually obtruded itself.

METHODS OF PREVENTION

All of the methods of attack on the venereal diseases may be grouped into four classes: (*a*) Social measures to diminish sexual temptation; (*b*) education in regard to venereal diseases; (*c*) prophylactic measures against venereal diseases, and (*d*) medical care.

SOCIAL MEASURES

Social measures to diminish sexual temptation divide themselves in two sorts of activities: (1) the repression of prostitution and of the liquor traffic, and (2) the provision of proper social surroundings and of opportunities for recreation and diversion.

However unjust it may seem to some, the repression of prostitution and of the liquor traffic are logically classed together. In the spread of venereal diseases they go together. The liquor traffic in numerous ways is the fosterer of prostitution. And the effect of alcoholic liquor is a factor that cannot be overlooked in the diffusion of venereal diseases, because of the inhibition which it produces in those restraining influences that under ordinary conditions prevent man's giving way to his impulses.

It has been recognized, then, by the Army that keeping liquor away from soldiers is of fundamental importance in the program of attack on the venereal diseases. It is not necessary to go into the measures which the government has enacted to keep alcoholic liquors away from the soldiers. It may be said, however, that these measures are being enforced, and that the amount of alcohol consumed by the present Army of the United States is negligible. There is an occasional bootlegger, and a small amount of liquor gets to the soldier in devious ways; but it is, in the total, inappreciable. For all practical purposes the United States Army at the present time is a body of total abstainers. This fact is undoubtedly a very great factor in keeping down in the Army the incidence of venereal diseases.

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* Because of lack of space, this article is abbreviated in The Journal. The complete article appears in the Transactions of the Section and in the author's reprints.

The control of the liquor traffic and of prostitution has been one which has called for cooperation between federal and local authorities. Of course, inside cantonments and other government reservations the federal authorities are supreme. In addition to this federal area, a district has been provided by law, consisting of a zone, at present designated by the Secretary of War to be 5 miles, around each of the cantonments. In these zones the federal authorities are in position to control completely the liquor traffic and the various conditions which encourage prostitution. Even, therefore, where cantonments are situated near districts presenting the worst social conditions, the government is able to make prostitution difficult, and is very effectively doing it.

Outside the zones, the federal government can still exert great influence as regards these conditions, and, as necessity compels, is doing this. But for the most part, when it comes to the question of controlling prostitution and liquor traffic outside the zones, reliance has been placed in great measure on the local civil authorities. I think it can be said with considerable satisfaction that communities have almost without exception realized their responsibility in these matters and have responded as well as the most sanguine could have asked in their efforts to improve them. Cities have cleaned up in the last few months that have never cleaned up before; to such an extent is this true, that conditions in regard to prostitution in this country are the best today that they have ever been.

The cause of this is the awakened public conscience; the determination of our people to do the best they can for their soldiers. To attain this, much has been done in directing the public conscience, in discovering the conditions that need correcting, and in showing the public useful avenues of work.

In this ticklish business the Army is not trusting to well meaning amateurs alone. It has its own trained forces in the field, recruited largely from the experienced workers of such organizations as the American Social Hygiene Association. Vice conditions are minutely studied, and are known with a fulness that is surprising. Often, as a result of this, the condition of prostitution in a community has been revolutionized for the better almost in a day. More often the improvement is less magical. But the pressure is everywhere, most about camps, and is resulting in rapid betterment.

The interest of the intelligent public, not merely of the intellectual classes, but of the every-day citizen, in the menace of venereal diseases, has been accumulating in the last few years. The war has stimulated this to a point at which you can get the public to support any policy concerning them that is sane and useful. This makes the present time a unique opportunity for attacking the problem, and sanitarians are showing a disposition to utilize it. Everywhere the work for the control of venereal diseases is stimulated and many new approaches to the problem are being developed.

You can hardly find a district where there is not some manifestation of this activity. New and better ordinances and sanitary regulations in regard to venereal diseases are being enacted, and more intelligence is being applied to their enforcement. Municipal clinics for the treatment of venereal diseases are being established. Established clinics are being reorganized to do better work. Hospitals for venereal diseases are being provided; even, in some places, isolation hospitals for venereal cases are in operation. Evidence of this sort of activity is found everywhere from the Atlantic to the Pacific. There has never been any systematic widespread attack on venereal diseases in the country before. There is now an almost universal and, for the most part, intelligent attack carried on.

The state councils of defense have generally taken up the work in their various states. Private organizations interested in public welfare are helping the campaign in innumerable communities. The aggregate, therefore, of work which is being contributed by forces not directly controlled by the federal government is not easy to be estimated.

The second group of measures to diminish sexual temptation are embodied in the provision of proper social surroundings and recreations. Applied to the Army, this means the furnishing of healthy social conditions and of opportunities for diversion for the soldiers at periods of leisure in camp, or when they are traveling, or on leaves of absence outside of their camps. In the camps the government has through the Commission on Training Camp Activities pursued a policy which, it seems to me, is of the highest intelligence in regard to the provision of recreations. The situation has been conceived to be much the same as that of a college community, where there are a large number of young men brought together, who have recently been detached from their familiar home surroundings; and it has been handled with college activities as the example to be followed. All of the wholesome forms of play which constitute the familiar recreations of college life have been included, and are encouraged and supported. The effort is to create the same sort of a class spirit among the men; to get them interested in their diversions and to excite in them a pride in their sports as in their work.

In furnishing proper social surroundings and facilities for recreation in the camp, the authorities have availed themselves of the invaluable experience of organizations which have been working so long in these fields in civil life, such as the Y. M. C. A., the Knights of Columbus and the Y. W. C. A. These organizations are not only doing incalculable work for the soldier in the cities; they are doing a greater one in the camps, where they have adapted themselves to military conditions.

Outside the cantonments and the zones, there has been an appeal to the civil population to add their part in this work. I think you are all more or less familiar with the cordial response which the public has given to this appeal. Hardly a community (no community that I know of) has failed to respond to this appeal to aid. What some communities have done amounts to examples of almost illimitable hospitality.

EDUCATION

The same civil agencies that have been working against prostitution have been active in the campaign of education of the public in sexual matters and in the dangers of venereal diseases. Education as to the dangers of venereal diseases has been a part of the general campaign. While the work of education has not been as extensive among the civil population as it has been among the soldiers, it has been by the same methods; the aggregate amount of it is very large and is undoubtedly doing a very practical amount of good. Nor has this campaign of education in the danger of venereal diseases been confined to the boys. It has been extended to the girls; and such organizations as the Young Woman's Patriotic League are reaching out to the girls: telling them the danger of venereal diseases and fostering in them a sense of their responsibilities in these matters. The General Federation of Women's Clubs, the Women's Christian Temperance Union, the Y. W. C. A.—such women's organizations as these are giving their powerful support to this work.

When it comes to the soldiers, the work of education is systematic and so thorough that it reaches every man. All of the agencies that have been mentioned already are lending their cooperation in this work. The work is guided and largely done by the War Department Commission on Training Camp Activities and the Social Hygiene Section of the Surgeon-General's Office. Instruction is given by lectures, by pamphlets, and by exhibits and moving pictures. But reliance is not placed solely on measures of general instruction.

Lectures and exhibits and pamphlets for the soldiers in general serve a useful purpose, but they do not reach the soldier that is most in need of them. To reach the soldier in the way that is unfailing and that makes a real impression on him is through his company commanders—the men from whom he takes his orders, and to whom he naturally looks for guidance. Through this channel pamphlets are distributed to him that give safe and unsensational information. But much more telling than this, company officers, both line and medical, give lectures to their men on sexual matters and the danger of venereal diseases. Every soldier is instructed on this subject. This is not a matter left to the volition of the officer; it is a matter concerning which he is under orders and the performance of this duty is seen to by checking up as in other important matters.

It is a difficult thing to get a good popular lecture to young men on sexual matters. In one quarter we get the maudlin; in another the extravagant, sensational and untruthful; in another the unreasonable and impractical; and even when the lecturer is sane, and honest, and wants to tell the truth, it is hard to get actual knowledge of the subject, and harder still to put such a lecture into form. To overcome, as far as possible, these difficulties, company officers are provided with full lectures on these subjects which they can use as such or as a basis for lectures of their own.

The lectures on sexual hygiene and venereal diseases given by company officers to their men are not inane, pseudomoral stuff. They are plain, serious, instructive talks given by practical men. These lectures reach all of the men; the two million men now under arms for the United States have been instructed more systematically and probably more intelligently than any other large body of men have ever been instructed in sexual and venereal subjects. It is not making saints of them; but it is doing a great deal in saving them from venereal diseases.

SEGREGATION OF PROSTITUTES

It will doubtless be noticed that in this program for the repression of prostitution nothing has been said about segregation, and that no part of it includes either the examination or certification of prostitutes. In the program everything possible is tried to discourage prostitution. It is a part of the policy to stimulate activity in providing adequate care of venereal diseases among the civil population, to the end, for one reason, that the numbers of venereal disease "carriers" shall be reduced as much as possible. There has been a very noticeable access of energy in the public care of venereal diseases as a result of the whole program that we have been considering. But the segregation of prostitutes and the regulation of prostitution in the Continental sense, that is, the examination of prostitutes, their certification and their toleration in definite districts, have not been included in this program, because they have not been regarded as advantageous.

In the attempt to coordinate social and medical forces in an attack on venereal diseases there is danger that the social forces may be allowed to overshadow and to cause the neglect of proper medical measures. They are so appealing to the moral and religious ideals of human nature, while the medical side has no such call; and the moral propagandist is apt to be intolerant of practical considerations.

There is always the possible danger of an unreasoning propagandist trying to run away with the situation. The fears of this were well expressed by Colonel Lyster[1] of the Army in an article on venereal diseases and the war. He says:

> "Now as to our new Army and the future: Higher rates will probably prevail for some time, but hope is backed by knowledge that we have the means, if we can apply them, of controlling this great producer of nonefficiency in armies.
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> "The greatest enemy to its [the Army's] health is venereal diseases. A continuation of the orders and methods successful in the Army from 1908 to date will make a successful answer to that challenge of disease. But no misleading and impractical fanatics must be permitted to have a hand in this question of national efficiency."

As far as I can sense the situation this danger has not yet materialized.

The two parts of the program have not proved unworkable together, and the forces behind the social program have not minimized the importance of or interfered with the effective administration of the medical program.

Medical Program

The second division of the program is the medical. The first part of this is prophylaxis to prevent infection after exposure. This, in the opinion of venereologists, is the crucial part of any program to reduce the prevalence of venereal diseases; omit it and you have omitted the most important single practical weapon we have for fighting this plague.

This part of the program is in universal effect in the Army and care is taken to see that it is thoroughly carried out. Venereal prophylaxis is a part of the duty of every regimental infirmary and of every other infirmary that has in its care the health of a unit of soldiers. The regimental infirmaries do most of this work and its conduct in the regimental infirmaries may be taken as an illustration of it in general. Everything for giving prophylactic treatment is always accessible in every regimental infirmary. The medical officers are responsible for it and it is carried out by specially trained noncommissioned officers. As far as possible selected men are chosen for these positions. I have inspected a good many regimental infirmaries and I have been impressed by the superior grade of these noncommissioned officers. Such an officer is constantly on duty and the returning soldier can get prophylactic treatment at any time in the twenty-four hours that he applies for it. This is a matter of general policy and is checked up by medical inspectors. It is seen to as far as possible that the conduct of prophylactic treatment is carried out seriously, without allowing an atmosphere of levity or obscenity to creep in.

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[1] Lyster, William: Venereal Disease and the New Army, The Journal A. M. A., Oct. 13, 1917, p. 1257.

The necessity for medical prophylaxis is instilled into the soldiers' minds. They are universally told that it is not a sure preventive of infection; that the sooner it is applied the more likely it is to be effective; and that after eight hours it is likely to be ineffective. The taking of it, if exposed, is a matter of army regulation. If a man contracts venereal disease, he is not punished beyond losing his pay while the disease disables him for duty, provided he had prophylaxis after exposure. But if he contracts a venereal disease and has not, according to regulations, had prophylactic treatment, he is court-martialed for disobedience of orders and, if convicted, is punished.

Wherever I have been, there is invariable testimony to the value of medical prophylaxis. The number of cases of venereal infection that develops after prophylaxis is surprisingly small. I have visited several regiments where no such cases had developed since mobilization.

Among the measures which are regarded as prophylactic must be included two others; one is the loss of pay which, according to army regulations, disability from venereal disease entails; the other is the fortnightly physical inspections. Both of these, in force since 1912 (Lyster), are regarded by army authorities as very important measures in the reduction of venereal diseases.

MEDICAL CARE OF VENEREAL DISEASES

The second item in the medical program and the last item in the entire program is the medical care of those who are venereally infected. Necessarily the first step in putting into practical force the care of venereal diseases in the new Army was to obtain a group of competent specialists in their treatment. In going through the personnel of the medical reserve corps there was found a very considerable number of well trained specialists in genito-urinary, venereal and skin diseases. Among these were many of the best known men in the country in this field. The time of the great addition of soldiers to the Army was in September and October, when the National Guard and the National Army were mobilized in the thirty-one cantonments distributed over this country. Provision had suddenly to be made for the venereal care, as for the care of other diseases, of thirty-one cities, each containing a population of from 20,000 to 25,000 men between the ages of from 20 to 30 years.

It goes without saying that equally competent men were not obtainable for all these cantonments; but it can be said that at the time of the opening of each cantonment there was available in each, expert skill in venereal diseases. Since that time, as occasion has required, there have been added to the various camps whatever men trained in venereal diseases were asked for by commanding officers or necessity seemed to require. Necessarily there was confusion and lack of preparedness in material ways at the time of mobilization in the cantonments; for one cannot build thirty-one cities in three months and at the end of the time have them as complete and finished as though they had existed always. The men in charge of venereal diseases, however, for the most part have shown themselves equal to the situation and the exceptions are few in which those affected with venereal disease have not been able to get adequate care in the cantonment base hospitals.

In the planning of the base hospital of each cantonment, full provision has been made for venereal diseases. It is a part of the policy of the Surgeon-General that acute venereal disease shall be confined to the hospital until the acute infectious stages are past. This means that all cases of acute gonorrhea belong in the hospital and all cases of syphilis which have early active lesions.

It is difficult at times to get this policy carried out. In many divisions the division surgeon has seen the wisdom of this course and has taken his own initiative in putting it into force. In a few places it has been for a time impossible, because of epidemics of acute diseases which have had prior demands on all of the available hospital beds. The policy has been thoroughly promulgated by the Surgeon-General and attention is called to it wherever neglect of it is discovered. This is, in some respects, a new military policy with us. It is one which it is believed will justify itself. It has several arguments for it; one is the great advantage which it affords in gonorrhea of curing quickly and preventing its spread to the posterior urethra; another is the assurance which it gives of thorough early treatment of syphilis, and the rapidity with which the infectious stage is passed; a third, and a very great advantage, is the reduction in the danger of nonvenereal spread of these diseases.

An effort has been made to standardize as far as possible the handling of venereal diseases. The first item of this consists in the hospitalization of acute cases, which has been referred to. There has been no effort to hamper mature men in carrying out established methods of treatment, but their attention has been called to the fact that in the Army team work is desirable, that bizarre and original methods are not necessarily most effective, and that the methods recommended have borne the test of experience. In carrying out this policy a small manual of venereal disease has been issued which includes, in addition to the program of attack on venereal diseases, brief articles which represent present established methods of treatment of the various venereal diseases.

It is part of the program to provide in the base hospitals complete laboratory facilities for the care of venereal diseases. There is provided in each hospital a general laboratory in which Wassermann tests are to be made. It is also part of the Surgeon-General's policy that each venereal service in the base hospital shall have its own small laboratory, equipped for examination for spirochetes and bacteria and for urinalysis examination. These laboratory facilities exist now in most of the cantonments that I have visited; in some they have not been developed. But wherever it is found that they are lacking, their establishment is stimulated.

In addition to the cantonments, there are many other large camps in which the care of venereal dis-cases is handled on the same plans as has been outlined for the cantonments.

It is part of the program to use the specialists in venereal disease in the division as instructors of other medical officers in venereal diseases. As a rule, the chief of a venereal service in a base hospital is the chief officer in venereal diseases. He is expected to be an instructor of other medical officers and his efficiency is partly gaged, not alone by the care which he gives his patients, but by the efficiency with which he develops his hospital organization, and the way in which he takes part in handling the venereal problem in the cantonment as a whole.

In order to increase efficiency in venereal diseases, three schools have been established for the intensive training of the less experienced men who are in this work. These schools are conducted by well known specialists in genito-urinary diseases and syphilis and skin diseases and are in centers furnishing large clinical material. The instruction furnished by these schools along with the experience that is being gained by the men in the venereal service of the various cantonments and camps, is, to say the least, keeping the men in this work from stagnating. There is little room for doubt that, in most instances, it is increasing the knowledge of the junior officers rapidly. By this means, and by the constant addition of specialists from private life who are coming into the medical reserve corps, it seems safe to believe that, as the demands on this service increase, we will be able to meet them with competent men.

The policy of handling the venereal diseases that I have outlined is that of the Surgeon-General, and, as far as it depends on central authority, it is efficiency carried out. Of course, the success of the medical care of venereal diseases varies greatly in the different cantonments. The organization of the Army, properly I think, gives large discretion to the division commander and similarly to the chief medical officer, who is the division surgeon.

The conduct of medical affairs in the cantonments, therefore, depends to a very large extent on the attitude of those in supreme authority; that is, (1) the commanding general in a cantonment; (2) the division surgeon, and (3) the commanding officer of the base hospital.

If either one of the first two, and the same is true to a less extent of the third, should be obstinate, opinionated and ignorant, and interfere, he could spoil the best efforts of competent chiefs of service under him. I know of no instance where this has been so flagrant as I have just indicated as possible, but I think it is true that there is considerable variations in the efficiency of venereal services due to variations in these commanding officers. Nevertheless, the efficiency of the venereal service is, in very large part, what the chief medical officer assigned to the service makes it. Some of the men taken from civil life are showing great originality and efficiency in this service.

To mention only a few of those whose work I have seen:

Major William W. Townsend at Camp Dix has developed a clinic in the base hospital that meets the most exacting requirements of what such a clinic should be.

Major J. Bayard Clark at Camp Lee showed the same sort of originality before he was called to similar work overseas.

Capt. Victor N. Meddis at Camp Zachary Taylor has developed a highly efficient and well run service.

Capt. Charles M. Williams at Camp Meade has approached the work from another side and has developed an original and most efficient system of looking after venereal diseases throughout the cantonment from division headquarters.

I mention these especially because they illustrate the fact that there is room for the personal equation, for initiative and originality. The various intelligent plans which are developed are all useful additions to our experience in this work; and, partly on account of this fact, large latitude is given to the chiefs in the development of their services. The men previously mentioned undoubtedly could not have made such good showing without the support of their superior officers, but it is equally certain that with the same superior officers less efficient men would have made no such showing. One gains the impression, indeed, that in spite of so-called government red tape, military routine—which the civilian physician seems to regard in the way the public looks at medical etiquette—the equipment of the various hospitals, as well as their competency in other directions to take care of their patients, usually depends on the personnel of its medical officers. Sometimes it is impossible to get the necessary things, but as a rule you find the supplies ready for work in the place which is under the man who either knows how to get easily the things he needs, or is persistent enough to keep after these things until he obtains them, no matter how many obstacles he encounters in the endeavor.

QUALITY OF TREATMENT VENEREAL PATIENTS ARE RECEIVING

Venereal diseases are as a whole receiving excellent attention in the cantonment hospitals. Of course, the same factors of personal equation come in here, and the quality of service furnished in venereal diseases varies with the men who are furnishing it. But the men in charge of this work in the hospitals are trained specialists of long experience, and, without exception as far as my knowledge goes, are applying themselves with the utmost zeal and devotion to it. I have had a considerable opportunity to judge of the quality of treatment they are giving their patients and I believe it is as good as is to be obtained in any other forty hospitals in the United States.

The place where patients with chronic gonorrhea and syphilis are likely to fail to get expert care is in the division as distinguished from the base hospital. The regimental surgeon must be a general practitioner while he is in that position. Adequate care of syphilis and of the chronic complications of gonorrhea eminently demand expert training, and this is not any more to be expected of the regimental surgeon than is special training in all of the other specialties. He also cannot have the special equipment necessary for it. It follows, therefore, that gonorrhea and syphilis should as far as possible be taken out of the care of the general medical officers. It is the policy of the Surgeon-General to send them to the hospital as freely as practicable, and everything possible is done to encourage the return of ambulatory cases to the hospital for such treatment as they need. It is also the policy to have a qualified officer detailed to the special duty of supervising all venereal matters, including the treatment of venereal cases throughout the cantonment. But in spite of this, the fact remains that the weak point in the care of the soldiers' venereal diseases is the care he receives when he is on duty; and he is allowed to stay on duty often when it would ultimately be better for him and for the service, if he were nominally as well as actually sick and under expert care. This is often due to the attitude of the commanding line officer. He wants his men or he does not want them, and he has no use for the soldier who is taking half-days off to go to the hospital for treatment. There is room for much education here, and for the development of considerable more cooperation.

RESULTS

The venereal situation in the United States Army has been excellent for several years. This is the result of the effective policy in handling these diseases that has been developed by the medical department. The present situation in the Army, then, as far as it is favorable, is not the result of any new policy, but is due to the continuation of the Regular Army policy, with such additions as the new situations have seemed to indicate.

Of course, a marked increase in venereal diseases was feared in the present military situation. Such an increase always follows mobilization of new troops, and the conditions which this great increase in troops entail.

Between 1897 and 1900, which was the period that covered the Spanish-American War, the venereal rate went up from an average of 80 per thousand to 160.

As Colonel Lyster says of our new Army, "higher rates will probably prevail for some time."

In order to appreciate the situation now, it is worth while to consider the Army record for venereal diseases for several years past: The venereal rate of the Army previous to 1898 averaged about from 80 to 85 per thousand. This is no criterion on which to base the comparison with present rates, for then we had none of the present means of diagnosis, and much that is now recorded as syphilis at that time was not included. Colonel Lyster thinks under present conditions of recording syphilis, the rate for venereal diseases during that period would have been 110 per thousand or more. With the mobilization of new troops in the Spanish-American War in 1898 the rate suddenly doubled, going to 160 per thousand. The high rate then produced persisted after the War for thirteen years, varying between 180 and 160 per thousand until 1911. (The rates from 1905 until 1917, inclusive, are shown in the accompanying charts.) Between 1909 and 1911, an effective policy of handling venereal diseases in the Army was developed by the medical department. The most important features of this policy were the enactment of regulations which provided for loss of pay for disability from venereal diseases, weekly physical inspections, and venereal prophylaxis. The result of this policy was shown by the rapid and continuous decline in venereal diseases. From a rate of 164 per thousand in 1911, it dropped to 116 in 1912, and by 1913, in two years, it had dropped to 86.

There are few more signal feats in sanitation than the reduction of 50 per cent. in venereal diseases in the United States Army, which was brought about by the policy of handling them developed by the medical department. This feat is the more creditable because it was the result of an original policy largely developed in our own Army and Navy.

Since 1913, the rate has remained under 90, excepting during 1916. In 1916, as a result of the rapid increase of the Army and the mobilization on the Mexican border, the rate went to 91.4.

In my estimates, I have taken the rate of 90 as the mean average toward which we should strive in the present crisis, although the rate of 91 in 1916 would certainly be fairly justifiable as the standard.

The rate for the Regular Army from September, 1917, to May, 1918, averages a little better than 90.

With the second week of mobilization in September the venereal rate for the National Army shot up to 367 per thousand. The National Guard at this time showed a rate of 150. The Regular Army made a very strong showing for itself by presenting a rate of 80 on this particular date.

Much has been made of this enormous rate of venereal diseases at the mobilization of the National Army. As a matter of fact, it does not give any fair indication of the relative prevalence of venereal diseases in the three services, for this reason: When venereal disease is discovered for the first time in a soldier it goes on record and is counted as a new case. It may, however, be an old infection. The result is, when new recruits are received, all venereal diseases among them at once enter the records; they include old as well as new cases. But after these old cases have once been counted, only actual new cases get into the records as new cases. It takes, therefore, about four weeks before the actual incidence of new cases of venereal disease in a body of troops can be determined. It does, however, give one a very fair idea of the relative prevalence of venereal disease in different bodies of troops to compare the rate when first recorded for these different bodies. And in this respect the contrast between the figures for the National Army and for the National Guard are interesting. The rate for the National Army for the first four weeks after mobilization of the Army was twice that of the National Guard.

I believe it may be said that fact shows that venereal disease was at the time of mobilization twice as common among the men who went in the National Army as it was in the men in the National Guard. That difference probably indicated what the relatively lax discipline of the National Guard could do in holding down the venereal diseases as compared with conditions of civil life where restraints are very much less in force.

During the months of September, October and November new recruits were constantly coming in, but their numbers were rapidly decreasing. From the time of mobilization, the venereal rate in the National Army showed a remarkably rapid decline. On December 1, these rates crossed below the rate of 90. From December 1 to date the rate for the National Guard has not reached 90 per thousand.

The rate for the whole United States Army for 1917, in spite of the enormous peak caused by mobilization, is 88, as compared with 91.3 for 1916.

It is interesting also to see what has happened with our expeditionary forces in France among whom the same general policy of handling the venereal problem is in force.

Among these troops we have none of the sudden peaks in our rate that occur when new troops first get into the records, therefore we are able to obtain a fair idea of the normal rate of incidence of actual new cases of venereal diseases contracted while soldiers are in service. Since November 23, when the first report was published, to date for only two weeks has the venereal rate reached 90. The figures since December 21 are these: 75, 57, 74, 58, 52, 55, 44, 48. They are running pretty nearly one half of what we might have expected as a reasonable showing when the war began.

7 West Madison Street.

NEUROSYPHILIS

ITS DIAGNOSIS AND ECONOMIC IMPORTANCE*

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Neurosyphilis is a much more frequent sequence of the infection than is indicated by the available statistics which were compiled before the introduction of modern diagnostic methods. The older statistics took cognizance chiefly of the fully developed and classic types of tabes and paresis and failed entirely to recognize a large group of cases with indefinite nervous and mental symptoms often diagnosed as neurasthenia with nervous breakdown which existed for years before definite degeneration stigmata developed. The well known statistics of Mattauschek and Pilz are the most complete because of the long period covered. Taking the records of 4,134 cases of army officers who had been infected during the two decades between 1880-1900, these investigators followed their careers to the year 1911. They found that 4.75 per cent. had developed general paresis; 2.5 per cent. tabes, and about 3 per cent. cerebrospinal syphilis. Similarly Pilz made an independent study of prostitutes who had been under police control from 1885 to 1895. He collected 2,662 instances and was able to trace 643 patients in whom the infection had existed from ten to thirty-eight years. Of this number 1.32 per cent. had developed general paresis.

These figures, of course, are based mainly on the fully developed clinical symptomatology of neurosyphilis and probably did not take into account the large number of victims who belong to the same category from a laboratory standpoint but present only vaguely defined clinical signs difficult to interpret from a clinical study alone. I have in my case records many patients who have been passed on by physicians without a suspicion of the existence of syphilis until a cerebrospinal fluid examination revealed the true condition. It is impossible at this time to give accurate statistics as to the percentage of infected individuals who would show involvement of the fluid. We have, however, fairly accurate data as to the number of patients in the first year of the disease who show clinical and serologic evidence of such involvement. As a result of several years of observation, I am led to believe that once the fluid is infected with the *Spirochaetae pallidae* resulting in strongly positive reactions cure of such infection seldom occurs unless persistent and proper treatment is instituted and vigorously carried out. If we assume, therefore, that the 25 or 30 per cent. of patients who show abnormal fluids in the secondary stage retain the infection, they are potential candidates for one or the other forms of neurosyphilis. This would lead me to suspect that instead of 10 per cent. of syphilitics with nervous involvement according to the old statistics, at least 20 per cent. would, on careful examination, be shown. This conservative estimate is probably lower than the actual number that would be revealed by our modern methods of precision. It is possible, too, that later infection of the nervous system in uncured cases takes place from a focus in some part of the body as in tuberculous meningitis from a focus of that disease.

If the hypothesis that a normal blood and fluid after efficient early treatment insure such patients against neurosyphilis is true, a vast field is opened for prophylaxis of the really serious consequences of the infection. We can, at least by employing the newer methods of diagnosis and treatment, control the majority of the early infections of the fluid and greatly limit the number of neurosyphilitics in the future.

METHODS OF PREVENTION

The purely clinical methods of diagnosis employed in the past and unfortunately also at this time, together with inefficient therapeutic procedures, have resulted in a large number of individuals permanently disabled both mentally and physically who become inmates of public institutions or a constant care and expense to their families. It is estimated that syphilis is the primary cause of 15 per cent. of the first admissions to our civil state hospitals. In a recent article, Dr. Pollock[1] states that a census of patients in the civil state hospitals of New York at the close of the fiscal year, June 30, 1917, disclosed that 1,370 cases of general paresis and 122 cases of cerebral syphilis were under treatment. Estimating the cost of maintenance of patients of this type to the state and the loss of earnings resulting from their incapacitation the appalling figure of $5,398,644.99 was obtained. How can these tragedies to the individual and the expense and economic loss to the state be prevented?

They can be limited (1) by educating the public as to the far-reaching results of the disease and encouraging sexual continence, and (2) by instructing the individual how best to escape infection after exposure. After infection the future health of the patient is largely dependent on the knowledge of the physician under whose care he may have the good or bad fortune to entrust himself. If the physician has the proper conception of the problem and recognizes the great importance of carefully formulated and efficient treatment he may, after a definite time, be cured clinically and serologically and be assured that his future is secure. Failure on the part of his medical adviser to properly employ modern therapeutic methods and to control the result by accurate serologic examinations results in a cure of symptoms only and not of the underlying infection. The existence at this time of such a large number of cases of neurosyphilis is largely due to the state of knowledge of the disease when individual infection took place, and to the belief at that time that practically all types of syphilis of the nervous system resulted from a late invasion with the virus. Treatment was more or less perfunctory; the serology of the fluid was undeveloped and only the terminal stage of nervous system syphilis was vaguely understood. It is not surprising, therefore, that many individuals infected previous to the modern era of accurate diagnosis and more efficient treatment are now the victims of what we may conservatively regard as preventable sequelae of the disease.

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* Because of lack of space, this article is abbreviated in The Journal. The complete article appears in the Transactions of the Section and in the author's reprints.

[1] Pollock, H. M.: The Economic Loss to the State of New York on Account of Syphilitic Mental Diseases During the Fiscal Year Ending June 30, 1917, Ment. Hyg., 1918, 2, 2.

We now possess accurate laboratory methods for the diagnosis of syphilis in practically all of its clinical forms together with specific drugs which, given in the proper manner and at the right time, are curative in the majority of cases. We also by a study of the pathologic changes in the various organs appreciate the great value of prophylactic treatment rather than an attempt to cure organs damaged beyond repair. The pathologist is always a therapeutic pessimist because he sees the end-results only of an infection. It should be our aim to teach methods which prevent such consequences.

INSTITUTIONAL INSTRUCTION

How can the knowledge at our command be utilized for the best interest of the individual and the community? In the first place, by a system of education by medical institutions with sufficient intelligence to grasp the importance of the problem. Institutions not organized for the benefit of a small group of favored men, but those which will give to the department of syphilology the same recognition they grant the departments of medicine and surgery. A teaching department organized on broad lines in our leading medical schools should serve as a center for the dissemination of accurate knowledge of this important infection. At present a vast amount of misinformation is conveyed to students by various departments in most of our teaching institutions. Theories and impressions not based on facts are seriously taught by men without a thought as to the results they will have on the future activity of the student of medicine. A professor of pathology in one of our universities belittles the value of the Wassermann reaction of which he knows nothing. Other medical men attach no value to the serology of the cerebrospinal fluid because they have not had an opportunity to correlate their clinical observations with long continued and accurate investigations along these lines. At this time more than any other in the past the problem is of the gravest importance to the state, as with the return of many infected soldiers foci of disease will be established throughout the country that will give rise to its wide diffusion. Dispensaries and hospitals should be properly equipped to diagnose and treat early as well as late forms of the infection and be controlled by men educated in modern methods of diagnosis and treatment who realize the difference between a clinical and a serologic cure. Many hospitals now refuse early cases of the infection when a cure is possible, but gladly receive interesting cases of incurable aneurysms, neurosyphilis and visceral syphilis. It is difficult to eradicate medieval ideas as to the great danger of infection from the minds of hospital authorities and to cause them to realize the value of prophylaxis. We fortunately possess in the city and state of New York departments of health which recognize the economic importance of syphilis and which provide ample laboratory facilities for its diagnosis. They are also active in educational campaigns and eventually will have a much deeper influence in safeguarding the public health from venereal infection than they have in caring for tuberculosis.

DEFINITION OF NEUROSYPHILIS

Neurosyphilis is employed as a comprehensive term to include all types of the disease which may involve one or all of the tissues of the central nervous system. The pathologic process may be limited to the blood vessels alone and give rise to a complex of symptoms due to partial or complete loss of blood supply to a definite area with resulting loss of function and eventual destruction due to softening. In this group we may have a clinical picture like that caused by cerebral arteriosclerosis of nonsyphilitic origin with vague symptoms, as headache, insomnia, loss of memory, inability to concentrate and mental depression. With gradual obliteration of the lumen of vessels supplying important centers or tracts, hemiplegias, paraplegias, monoplegias, aphasia, hemianopsia, convulsions, limited or generalized, may take place. As a result of localized or generalized arteritis, aneurysms and hemorrhages occur with pressure symptoms and tract degenerations accompanied, at times, by profound coma and death.

In uncomplicated vascular syphilis the cerebrospinal fluid may be entirely negative or show a marked globulin reaction, no excess of lymphocytes and either a positive or negative Wassermann reaction. The blood Wassermann may also be positive or negative. If the latter, a positive reaction may at times be activated by treatment. The results of serologic examinations in vascular syphilis are therefore frequently misleading. Damaged vessels often persist after the Wassermann reaction becomes negative and are the cause of cerebral or other hemorrhages or lesions due to thrombosis or partial vessel occlusion. Cerebral arteritis may be a part of a generalized arteriosclerosis with high blood pressure, cerebral hemorrhage and death, a condition not to be distinguished from the nonsyphilitic type in symptoms or terminal stage. Cerebral symptoms are often interpreted after the diagnosis of aortitis and blood pressure determination.

TYPES OF LESIONS

In early syphilis the lesions in the central nervous system are comparable to those met with on the cutaneous surface. They may be superficial and involve only the meninges or may extend to the brain substance itself. Early convexity meningitis is manifested by headache, vomiting, delirium and convulsions which lead to coma and at times to death. Localizing symptoms may be present or absent.

Case 3.—A man, aged 45, consulted me, April 26, 1916, with a primary lesion. His Wassermann reaction was ++++. He received seven intravenous injections of arsphenamin and sixteen injections of mercury, which treatment was followed by a negative test. He then left town. Early in October he suffered from general malaise, loss of appetite with nausea and vomiting in the early morning. A few days later he developed mild transient generalized headaches; and October 27, numbness of the right upper extremity followed by transient motor and sensory aphasia occurred. When seen October 30, he had a right-sided facial paralysis; all the deep reflexes were hyperactive and greater on the right side; the pupils were slightly irregular, reacting well to light and accommodation but did not hold when contracted. His blood was ++++ and a spinal puncture revealed: cells, 944; globulin, ++++; Wassermann reaction, ++++ to 0.2; colloidal gold test, 5555542100. Six intravenous and eleven intraspinal injections with eighteen injections of mercury restored the patient to his former good health. His headaches and numbness disappeared after the second intraspinal injection, and he had no more attacks of aphasia. His fluid and blood have been negative since May, 1917.

Case 4.—A physician developed an initial lesion on the thumb in November, 1916, followed by secondaries. He received immediate treatment with arsphenamin and mercury. Two months later he had right-sided parietal headaches. A lumbar puncture made in May, 1917, was said to show 104 cells, the other findings being weakly positive. He received three intraspinal injections, after which the fluid was reported negative. His headaches did not entirely disappear and became more intense a few months later. He suffered from insomnia, great depression, impaired mental processes and lost 24 pounds in weight. I saw him Nov. 20, 1917. A few days later, while in the sanitarium, he became excitable and wildly delirious, his delirium lasting several days. Spinal puncture revealed: cells, 416; globulin, +++; Wassermann reaction, ++++ to 0.4; colloidal gold test, syphilitic curve. The serum was negative. Treatment: Seven intravenous and six intraspinal injections, with a course of mercury, were given. All the clinical symptoms vanished and the fluid rapidly became negative.

These cases are usually more acute and rapid in development than the late types of meningitis. Pupillary changes are, as a rule, absent or only slight. In basilar meningitis localizing symptoms are more often met with because of the anatomic structure of the base. Cranial nerve paralyses and pupillary changes usually indicate the onset of this type which frequently shows no subjective symptoms and is only indicated by objective signs as pupillary irregularity and changes in the light reflex. Third nerve palsy is most frequent: occasionally the facial and auditory nerves are involved as well as the optic.

SEROLOGY

The examination of the spinal fluid gives an accurate index of the intensity of the process and usually shows most positive phases in the convexity type in which the pleocytosis may reach a count of 800 or 900, or even 2,000 or 3,000 with positive globulin and a positive Wassermann reaction in the higher dilutions together with a paretic gold curve. In basilar meningitis we may also find marked serologic changes, but sometimes only one or more phases positive in the early development of the process. A sharp limitation of the infection to one nerve or its nucleus may cause pupillary changes or oculomotor paralysis with little or no change in the fluid. These cases may terminate in a spontaneous cure with local damage and no tendency to progress.

EARLY APPEARANCE OF SYMPTOMS

Disseminated forms of cerebrospinal syphilis are met with in the first months of the infection with symptoms referable to the cord meninges as well as to the brain coverings. A careful interrogation of patients with advanced neurosyphilis will often elicit the information that paresthesias, bladder weakness, girdle sensations or rectal disturbances were noted in the early months of their infection. These symptoms at times regressed under treatment, but usually recurred with greater intensity at a later period. Such symptoms without doubt indicate early cord involvement and, when untreated, terminate in typical tabes or spinal syphilis.

A proper comprehension of the late forms of neurosyphilis is possible to one who can visualize the manner in which the tissues react to the infectious agent which invades the cerebrospinal fluid early in the disease. Foci are established in the blood vessels of the brain or cord meninges or the parenchymatous structure of the nervous system, which may remain latent for years or slowly compromise by pressure or degeneration important centers or tracts with resulting focal or general symptoms. As in the skin, a syphilitic process may spontaneously subside in one place and reappear in another. It may rapidly cause a local destructive lesion with definite focal symptoms, a slow invasion of an important center, or a gradual degeneration of cord tracts or the cerebral parenchyma. It is not surprising, therefore, that the symptomatology is so varied and simulates so frequently lesions due to other infections or new growths. An invasion of the brain parenchyma may be present for years with few or no symptoms, if the meninges or important centers are not implicated. The character of the lesions may only be revealed by the serology of the fluid.

INTERPRETATION OF SPINAL FLUID FINDINGS

Observation of a large number of cases during the past six years, in which the clinical manifestations have been carefully correlated with the serologic findings, convince me that the symptomatology should be largely restudied and interpreted from a serologic as well as from a clinical standpoint. Fluid findings enable us to differentiate more accurately the symptoms due to pure vascular syphilis, meningovascular or parenchymatous. It enables us to prognosticate the outcome of certain types and to understand why the deeper forms resist all treatment and eventually terminate in incurable conditions. The latter type may have few symptoms but show a serology which offers the gravest prognosis, the former, acute and menacing symptoms which readily yield to treatment and terminate in complete recovery. The statements so often made that no information is afforded by spinal examinations is, in my experience, entirely erroneous and misleading.

A low grade parenchymatous encephalitis with slight or no meningeal involvement may exist for years with indefinite symptoms often wrongly interpreted. A slight character defect, loss of ambition, forgetfulness, irascibility, mental depression, so-called neurasthenia, symptoms terminating in a nervous breakdown, often precede for years the final stages of paresis and go unrecognized until an accidental eye examination reveals pupillary changes. Patients have come under my care in whom the diagnosis was only made after a sudden loss of consciousness following some unusual mental effort or without assignable cause. Spinal fluid examination reveals the real condition and enables one to correctly predict the patient's future.

SYMPTOMATOLOGY

In cord syphilis and tabes the early symptomatology may be equally vague and long unrecognized. Gastric crises are taken for appendicitis, gastric ulcer, floating kidney, gallbladder involvement, and patients having such symptoms often go to the operating table. Rectal and bladder crises are attributed to local conditions. Leg pains are called sciatica or rheumatism and may precede for years definite disturbance in gait. A radiculitis may exist with pains for months or years before definite involvemnt of the tracts takes place. The serology in such cases is definite and affords diagnostic and prognostic indications of the greatest value.

The symptoms which cause the patient to consult a physician aside from such evident ones as double vision, marked headache, convulsions, severe tabetic pains or paralyses are the following: vague fears resulting from a knowledge of old infection, weakness of the bladder and impaired sexual power, loss of memory, impaired business judgment, speech disturbance, gradually increasing motor aphasia, complaint on the part of the family or business associates as to increasing irritability or unreliability of the patient, changes in personality, and character defects foreign to the normal state.

In a paper of this character a complete syndrome cannot be given. It is only suggestive and intended to point to the necessity of correlating clinical and laboratory study. It must always be kept in mind that, while the syphilitic inflammation may limit itself sharply to one or the other of the tissues mentioned, pure types are the exception rather than the rule, and that complicated and transitional forms are usual and confuse the clinical diagnosis. A hemiplegia due to an arteritis and hemorrhage may give a high cell count (in one case 1,100) indicating an accompanying meningitis. A gummatous meningitis involving the convexity follows the pial vessels into the brain cortex and may give the clinical picture of a paresis or brain tumor. Treatment in such cases may result in a more favorable outcome than indicated by the serology. Psychoses without the earmarks of paresis with positive fluid findings point to a cerebral encephalitis of unusual localization.

Neurosyphilis may also be complicated with chronic alcoholism as well as with a nonspecific arteriosclerosis. t may be activated after a long period of latency by rauma, unusual mental strain, and by the stress and traumatisms of war. In the routine examination of the officers' training camps several patients have come under my care in whom the condition was revealed by a systematic neurologic examination without previous knowledge on the part of the patient. Under active war conditions an acute activation of the trouble would doubtless be brought about. Railway spine is likewise a not infrequent activation of a latent syphilis in this region.

In a former communication,[2] I referred to the existence of conjugal and family groups of neurosyphilis and quoted some of the available statistics. I also referred to Nichol's experimental work and strain of *Spirochaetae pallidae* recovered from the spinal fluid. The work begun by Nichols has subsequently been carried on by Reasoner, Wile, Zinsser and Hopkins, and others. Reasoner's[3] results were presented in a paper in 1916. He was able to demonstrate fixed differences in various strains of spirochetes as studied in the rabbit. Organisms recovered from the nervous system of patients with early cerebrospinal syphilis produced in the rabbit's testicle a definite type of orchitis with tendency to central necrosis and with eye changes, choroiditis and chorioretinitis in 75 per cent. of the inoculations. Eye involvement in the rabbit is, in his opinion, suggestive of a high degree of invasiveness or predilection for the human nervous system. The knowledge we have acquired regarding types of pneumococci and strains of streptococci and other organisms strongly suggest that the spirochetes may acquire certain changes in biologic characters by repeated passage through the central nervous system of the host. Racial immunity to neurosyphilis of which we have some clinical evidence strengthens the theory of strains of the syphilis organism with highly invasive power.

The following series illustrates the incidence of neurosyphilis in closely related individuals:

REPORT OF CASES

Group 1.—C. (husband), aged 55, had tabes, but gave no history of infection. There were typical neurologic signs of locomotor ataxia. Spinal puncture revealed: cells, 54; globulin, +; Wassermann reaction, ++++ to 0.4; colloidal gold test, 2233210000. Serum, ++.

C. (wife), aged 52, had tabes, but gave no history of syphilis. Married 30 years; no children; seven or eight miscarriages. Pronounced symptoms of tabes. Spinal fluid revealed: cells, 5; globulin, ++; Wassermann reaction ++++ to 0.6. Serum, ++++.

Group 2.—M. (husband), aged 63, had taboparesis, but gave no history of infection. Tabetic symptoms were present for years. Mental disturbance and right hemiplegia occurred in 1912. Spinal fluid: strongly positive. Serum, ++++.

M. (wife), aged 62, had taboparesis. In 1897, the ovaries and uterus were removed for gonorrheal salpingitis. In 1907, she developed insomnia and difficulty in walking. In 1910, melancholia and suicidal tendencies appeared. Spinal fluid was not obtained for examination.

Group 3.—C. (husband), aged 35, has tabes. The chancre and secondaries appeared at age of 17. There was no subjective complaint. Objectively, the patient has Argyll Robertson pupils and loss of deep reflexes. Spinal puncture revealed: cells, 4; globulin, ++++; Wassermann reaction, + + + + to 1 c.c. + 0.8. Serum, + + + +.

C. (wife), aged 32, has tabes with optic atrophy. She has been married fifteen years; four miscarriages; one healthy child. No cutaneous symptoms. Six months after marriage she had a right-sided facial palsy. Twelve years later pronounced tabes occurred with rapid loss of vision of the left eye and impairment of the right. Spinal puncture revealed: cells, 67; globulin, ±; Wasserman reaction, ++++ to 0.4. Serum, ++++.

Group 4.—D. (wife), aged 62, had paresis, but gave no history of infection. For many years she has been nervous. In 1913, she had attacks of syncope with nausea and vomiting; in 1916, coma lasting three or four days occurred. Changed pupillary and deep reflexes, tremors, speech disturbances and memory defects were present. Spinal puncture revealed: cells, 7; globulin, ++++; Wassermann reaction, ++++ to 0.2; colloidal gold test, 5544433000000. Serum, ++++.

D. (husband) died of paresis.

Group 5.—N. (wife), aged 33, had cerebrospinal syphilis, but gave no history of infection. Married ten years; no miscarriages. One child, 5 years old, has congenital syphilis.

For nearly a year she had been very nervous and irritable; complained of extreme exhaustion; occipital headaches and pains in extremities. Pupils were irregular, unequal and sluggish to light. The deep reflexes were hyperactive and unequal. Spinal puncture revealed: cells, 80; globulin, ++++; Wassermann reaction, ++++ with 2 c.c.; colloidal gold test, 5555410000. Serum, +.

N. (husband) died of paresis.

N. (son), aged 5 years, is mentally retarded, but has no physical defects excepting external strabismus of left eye. Spinal puncture revealed: cells, 1; globulin, ±; Wassermann reaction, — with 2 c.c.; colloidal gold test, 1111000000. Serum, ++++.

Group 6.—N. (husband), aged 50, had paresis, but gave no history of syphilis. In 1914, he developed typical paretic speech, mental defects and somatic signs. Spinal puncture revealed: cells, 16; globulin, ++; Wassermann reaction, ++++ to 0.2; colloidal gold test, 5555543100. Serum, ++++.

N. (wife), aged 33, had cerebrospinal syphilis. Married nine years; one miscarriage; two children died in infancy. One living child 5½ years old has congenital syphilis. She complained of headaches, insomnia and nervousness, and had pupillary changes and unequal reflexes. Spinal fluid not obtained. Serum, +.

N. (son), aged 5½ years, was mentally defective. Spinal fluid and serum were negative, but these examinations were made after the child had received prolonged treatment.

Group 7.—G. (father), aged 43, had cerebrospinal syphilis. The chancre appeared in 1901, and in 1909 there was paresis

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2. Fordyce, J. A.: The Treatment of Syphilis of the Nervous System, The Journal A. M. A., Aug. 15, 1914, p. 552.

3. Reasoner, M. A.: Some Phases of Experimental Syphilis, The Journal A. M. A., Dec. 16, 1916, p. 1799.

of left leg and bladder paralysis. Spinal fluid was not obtained. Serum, —.

G. (daughter), aged 12, is feeble-minded. She has hutchinsonian teeth and arched palate. Is negative neurologically. Spinal fluid was not obtained. Serum, ++++.

Group 8.—E. (mother), aged 31, had tabes. She has been married eleven years; no cutaneous symptoms. Neurologically, she presents Argyll Robertson pupils and absent deep reflexes. Spinal puncture revealed: cells, 18; globulin, ++++; Wassermann reaction, ++++ to 0.4; colloidal gold test, 1223321000. Serum, ++.

E. (son), aged 8½, has cerebrospinal syphilis with unequal, irregular and fixed pupils. He is very nervous and was removed from school because of lack of cooperation, inability to grasp instruction and violent temper. Spinal puncture revealed: cells, 2; globulin, ++; Wassermann reaction, ++++ to 0.2; colloidal gold test, 5555543100. Serum ++++.

Group 9.—K. (father), aged 38, had paresis. The chancre appeared in 1904, and delusions of grandeur in 1911. Death from paresis in 1916. Spinal puncture revealed: cells, 86; globulin, ++; Wassermann reaction, ++++ to 0.2. Serum, ++++.

K. (child), aged 5, had hydrocephalus when an infant. When 5 years old interstitial keratitis developed.

Group 10.—E. (husband), aged 44, had cerebrospinal syphilis (paraplegia).

E. (wife), aged 35, had hemiplegia and evidence of disseminate cerebrospinal syphilis.

Group 11.—S. (husband), aged 36, had paresis, the chancre appearing in 1905. In 1907, delusions of grandeur developed and he was committed to one of the state hospitals. Spinal puncture revealed: cells, 127; globulin, ++; Wassermann reaction, ++++ to 0.2; colloidal gold test, paretic curve.

S. (wife), aged 35, had incipient paresis, the chancre and secondaries appearing in 1909. In February, 1918, she developed paralysis of the third and fourth nerves. Argyll Robertson pupils, extreme nervousness and insomnia were present. Spinal puncture revealed: cells, 9; globulin, ±; Wassermann reaction, ++++ to 0.6; colloidal gold test, 5555543100. Serum, ++++.

Group 12.—M. (wife), aged 31, has tabes, but she denied syphilitic infection. Married seven years; no children; one induced miscarriage. She has subjective and objective manifestations of tabes. Spinal puncture revealed: cells, 2; globulin, —; Wassermann reaction, ++++ to 0.4; colloidal gold test, syphilitic curve. Serum, +++.

M. (husband) is in a state hospital with paresis.

Group 13.—K. (husband), aged 44, had optic atrophy. The chancre appeared in 1914 with secondaries of skin and mucous membranes. In 1916, his vision became impaired. Spinal puncture revealed: cells, 10; globulin, +; Wassermann, reaction, ++++ with 2 c.c.; colloidal gold test, 5555542000. Serum, ++++.

K. (wife), aged 25, had incipient paresis (?); a late secondary eruption appeared in September, 1915. She presents unequal pupils, hyperactive reflexes, more so on right side. Spinal puncture revealed: cells, 185; globulin, +; Wassermann reaction, ++++ to 0.2; colloidal gold test, paretic curve. Serum, ++++.

Group 14.—R. (husband), aged 35, had incipient paresis, but gave no history of infection. In April, 1918, left-sided hemiplegia developed. Spinal puncture revealed: cells, 7; globulin, +; Wassermann reaction, ++++ to 0.2; colloidal gold test, paretic curve. Serum, ++++.

R. (wife), aged 30, has cerebrospinal syphilis. The pupils are unequal and irregular with sluggish light reaction; unequal exaggerated deep reflexes; headache and insomnia. Specimen of spinal fluid not obtained. Serum, ++++.

Group 15.—W. (father), aged 35, had cerebrospinal syphilis. Date of infection unknown. Unequal, irregular pupils; hyperactive reflexes, more so on right side. Spinal puncture revealed: cells, 25; globulin, +; Wassermann reaction, ++++ with 2 c.c.; colloidal gold test, syphilitic curve. Serum, ++++.

W. (mother), aged 32, had cerebrospinal syphilis. No signs of syphilis developed until syphilitic child was born five years ago and strongly positive Wassermann reaction was discovered. Argyll Robertson pupils were present and the deep reflexes were exaggerated, more so on right side. Spinal puncture revealed: cells, 2; globulin, ±; Wassermann reaction, ++++ to 1.5; colloidal gold test, syphilitic curve. Serum, ++++.

W. (daughter), aged 5, had juvenile paresis. When 3 months old she had a syphilitic eruption; at age of 18 months a hemiplegia developed; at age of 4 years epileptiform attacks occurred. Spinal puncture revealed: cells, 140; globulin, ++++; Wassermann reaction, ++++ to 0.2; colloidal gold test, paretic curve. Serum, ++++.

W. (son), aged 2½ years, has cerebrospinal syphilis. He has always been a healthy child; is bright and appears normal. Has unequal pupils. Other findings negative. Spinal puncture revealed: cells, 12; globulin, —; Wassermann reaction, ++++ with 2 c.c.; colloidal gold test, syphilitic curve. Serum, ++++.

Group 16.—P. (father), aged 46, had optic atrophy. The chancre and secondaries appeared in 1898. The patient was well until 1916, when his vision became impaired. Fluid examination was not obtained. Serum, ++++.

P. (wife), aged 42, had tabes, but gave no history of an initial lesion or secondaries. Married in 1899. For seven years she has suffered with gastric crises; has classic signs of tabes. Spinal puncture revealed: cells, 37; globulin, none; Wassermann reaction, ++++ to 0.6; colloidal gold test, 1123100000. Serum, ++.

P. (child), aged 11, was considered a normal child until school authorities reported that she was backward. Has grown very nervous and has increasing difficulty in learning. Has Argyll Robertson pupils. Spinal puncture revealed: cells, 1; globulin, +; Wassermann reaction, ++++ with 1 c.c.; colloidal gold test, syphilitic curve. Serum, ++++.

Group 17.—S. (son), aged 20, has juvenile paresis with optic atrophy. He is underdeveloped, completely blind and helpless. Spinal puncture revealed: cells, 15; globulin, +++; Wassermann reaction, ++++ to 0.2; colloidal gold test, paretic curve. Serum, ++++.

S. (father) died of paresis.

S. (mother), aged 38, gives no history of initial lesion or rash. Physical examination is negative; her blood has been repeatedly negative, and a lumbar puncture made recently was also negative.

Group 18.—P. (wife), aged 25, has incipient paresis and denied syphilitic infection. Argyll Robertson pupils. Unequal reflexes and beginning deterioration. Spinal puncture revealed: cells, 50, globulin, ++++; Wassermann reaction, ++++ to 0.2; colloidal gold test, paretic curve. Serum, ++++.

P. (husband) is now in a state hospital with paresis.

Group 19.—H. (husband), aged 38, has clinical symptoms of tabes. Permission for spinal puncture has not been granted. Wassermann reaction was ++++.

H. (wife), aged 34, has all the neurologic signs of tabes. Has not permitted a spinal puncture. Serum, ++++. She has a son, aged 10, who gives positive blood reaction and has a perforated palate, but no neurologic signs.

NEUROSYPHILIS IN THE ARMY

The thorough and scientific organization of the Army and Navy medical staffs in charge of venereal diseases with the cooperation of the medical section of the Council of National Defense has been followed by a marked decrease in the incidence of the venereal menace among the enlisted personnel. The scientific study of syphilis before the outbreak of war by Nichols, Reasoner, Craig, Vedder and others was largely influential in disseminating modern methods of diagnosis and treatment among the medical officers of the Army. This work has been ably supported since our entry into the war by the committee appointed by the Surgeon-General of the Army under the immediate direction of Colonel Russell. Many of the reserve medical officers have had intensive training in the army medical schools and in venereal clinics, and now in active service are gradually acquiring exact technical skill. I have received a number of communications from former assistants and pupils which show a keen grasp of the syphilis problem and a constant endeavor to enlarge their knowledge.

The importance of early recognition of neurosyphilis and its significance to the future activity of the individual might here be emphasized. Medical officers should be instructed in the present day methods of spinal fluid examinations and learn to interpret the significance of the various positive phases which may be present. The treatment of neurosyphilis aside from the use of arsphenamin intravenously and mercury intramuscularly is perhaps too technical for general employment in the Army. Patients who show such involvement and who do not yield to the methods easy of application should be sent to a base hospital or discharged from the service and referred to a clinic equipped to treat them.

Examination of recruits and officers in the training camps has revealed the presence of neurosyphilis in individuals who either were unaware of their infection or who had considered themselves cured and were suffering no inconvenience from the nervous system involvement. Within the past year, I have seen a number of men who have been rejected because of pupillary anomalies; many of these patients have such slight signs that they are only demonstrated by the rigorous examinations now demanded on the part of the Army.

IMPORTANCE OF LABORATORY TESTS

The value of spinal fluid examination as a diagnostic measure in neurosyphilis is becoming more generally recognized among syphilographers and neurologists. Standardized methods are, however, not as frequently employed as they should be. Many laboratories report only a positive Wassermann reaction without titration of the fluid in strengths of from 2 to 0.2 c.c. or less. Others employ only 0.5 c.c. of fluid and thus fail to obtain a positive reaction in fluids which would give it in larger quantities. The reaction in many cases of tabes and cerebrospinal syphilis has been reported as negative because of failure to use the larger amounts of fluid. On the other hand, the presence of a strongly positive Wassermann reaction in the higher dilutions indicates a more serious type of infection and taken with a paretic gold chlorid reaction suggests paresis or preparesis. We can, therefore, prognosticate with a fair degree of accuracy the eventual outcome of our cases of neurosyphilis by properly performing and interpreting our fluid serology and observing the effects of treatment.

TREATMENT

Treatment begun in primary and very early cases of secondary syphilis doubtless prevents infection of the spinal fluid, but it is impossible to say how much value treatment has in preventing the invasion of fully developed secondary syphilis, for at that time involvement may already have taken place. A recognition of this possibility with properly applied diagnostic and therapeutic methods readily controls early syphilitic meningitis as illustrated in the cases previously quoted and will prevent the degenerative sequelae which follow the long years of latency.

In order to emphasize again the importance of early lumbar puncture and careful and repeated neurologic examinations, I would like to cite another case:

A man who presented himself with a secondary rash in February, 1917, received fifteen injections of arsphenamin and thirty of mercuric salicylate. While under treatment in July, he complained of severe headaches; these occurred in October with marked vertigo and ataxia. At that time, examination revealed pupillary inequality, hyperactive reflexes and a very strongly positive spinal fluid. In another instance, a patient who was in the second year of the infection came complaining of pains about his knees. He had had thirty-two injections of arsphenamin, over 100 injections of mercury and many inunctions. The only neurologic abnormality was beginning Argyll Robertson pupils. The spinal fluid revealed: cells, 24; globulin, ++; Wassermann reaction, ++++ to 0.2; gold chlorid test, 1233100000.

CONCLUSIONS

In the past decade much progress has been made in our knowledge of the nature, development, prognosis and treatment of neurosyphilis. The various types had been correlated with the serology of the blood and spinal fluid and a fairly firm foundation established on which to build in the future. By carefully conserving the data now available, we may be able later to answer some of the questions which so deeply involve the patient's future health and the community's welfare. Some of these questions are the following:

1. Are the present criteria of cure all that are demanded to insure against a relapse of the infection?
2. Assuming that we have a negative blood Wassermann during a year after treatment is discontinued which remains negative after a provocative arsphenamin injection and that the spinal fluid is not infected, the following questions come up for consideration:

(*a*) Can we assure the patient with certainty against a recurrence? A mathematical reply cannot be made to these queries, but up to this time we have seen no relapses in patients who have complied with the criteria in question. All the evidence favors the view that a serologic and clinical cure will remain permanent. It is always possible, however, for spirochetes to be hidden away in some of the tissues too few in number to produce the Wassermann reaction but which may be activated at some future time and produce tissue reactions. This possibility has been observed in syphilis of the eye and in arteritis of undoubted syphilitic origin.

(*b*) Does freedom of the nervous system from infection in the first year with a positive blood Wassermann indicate that such infection cannot occur later from an uncured focus? This question can only be answered when we carefully compare the data obtained from cases of early infection with future observations of such patients. All institutions and physicians should therefore preserve carefully all records, serologic and clinical, and compare them with those obtained in future examinations. Standardized methods of diagnosis and treatment (amount and kind) with results should be adopted and preserved in the form of a medical register like the one used in the medical department of the Army.

8 West Seventy-Seventh Street.

A Patriotic Duty.—To be free from disease, or, if, unfortunately for ourselves, we cannot be free from disease, to prevent by every precaution, the spread of our disease to others, is one great thing we can do for our country.—Editorial, *Minnesota Public Health Association Journal.*

SYPHILIS AND VENEREAL DISEASES AS A PUBLIC HEALTH PROBLEM *

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MINNEAPOLIS

Health authorities ought to be concerned with all diseases which, being infectious and communicable, are likely, through their spread, to endanger public health. It is said that the knowledge necessary to control such a disease consists of the recognition of the causative germ, its method of being carried and the having of a specific therapy. For years we have known the germs of syphilis and gonorrhea, have been perfectly cognizant of how both diseases are carried, and have had at hand a more or less specific therapy. More than that, we have known that continence is entirely consistent with health, and that it is an almost sure preventive of both diseases; and yet, we have hesitated as individuals and as a profession to go on record for it. We have even hesitated, and perhaps with good reason, to advocate those well known artificial means of prevention which the Army and Navy have demonstrated to be so valuable.

The public at large has been inclined to discount what seemed to it unbelievable figures of the prevalence, and the havoc wrought by venereal disease, and has not shown a willingness to be informed, in plain language, of all the facts. This has led to the nefarious practice of making these diseases "secret diseases," in fact as well as in name, and with a full knowledge that a goodly proportion of innocent persons were constantly being infected, we still have tolerated this policy of silence. It has taken a war to wake us up and make it possible to attempt to handle these diseases along the same lines that other infectious and communicable diseases are handled. The government knows full well that we must have well soldiers if we would win this war; it also knows that with every war there has been a marked increase in venereal diseases, and that the control of these diseases among the enlisted men would be its greatest disease problem. These facts were given full recognition when, early in the war, a very definite and complete program was adopted for the early diagnosis, treatment and control of venereal diseases. Not, however, until the mobilization of our draft Army did any one fully realize the very great need of the rapid extension of a similar program to the civil population. When it was seen from the figures produced that the venereal disease rate of civilians was several times greater than had been the rate in the Regular Army, the War Department, particularly through the Surgeon-General's Office began to call on the public health officials of various states to undertake definite campaigns to control these diseases. The fact that nearly every family in the land has had or will have a very personal interest in our Army makes the public sympathetic to this work as it has never been before.

California was, I think, the first state to answer the call, and made an appropriation, from war emergency funds, of $60,000 for the organization of a bureau of venereal diseases in the state board of health. Minnesota followed a few months later with an appropriation of $35,000 for the creation of a similar division. In both cases the funds are to run to the next meeting of the legislatures; for California this means two years; for Minnesota, one year.

In all of the work, one fundamental fact has been kept in view, namely, the absolute need of recognizing the complexity of the problem and of coordinating the work of all groups interested in any particular angle of the attack. Generally speaking, this is in contrast to any previous method under which all of us have seen failures registered because of the necessary limitations.

PROGRAM OF ATTACK

The program for a state divides itself logically into four parts. These will be considered in the order of their importance from the standpoint of their effect on the reduction of disease. The first three parts are concerned with the control of three distinct groups of patients, the fourth part with educational work.

THE CARRIER

The first group of patients with which we are concerned is the one in which enforced quarantine and treatment are necessary. Here are included the great carriers of these diseases, the prostitute, both professional and clandestine, prisoners and inmates of institutions, and incorrigible patients. So far as prostitution is concerned, there must be active cooperation of the police departments and courts in suppressing as far as possible all prostitution. This action will make prostitutes inaccessible, and so reduce exposures; reduction of exposures is bound to reduce infections. Examinations should be made in all cases and quarantine instituted in a hospital or other suitable place.

EFFECT OF LAW ENFORCEMENT ON EXPOSURES AND INFECTIONS

Month	Mean Strength of Command	Venereal Diseases, New Cases	Exposures Represented by Prophylactic Treatments
October	13,813	193	951
November	16,138	101	669
December	17,532	124	623
January	18,068	61	378
February	17,315	86	478

The effect of this work is very nicely demonstrated by some figures collected in San Francisco.[1] In the first place, the problem was rapidly reduced, as shown by the fact that in October before the work started, nearly 400 women were brought into court on charges of moral turpitude. Soliciting on the streets was rampant. November 1, arrangements were made for jail sentences in all cases with quarantine and treatment of those found diseased. During November only about 150 appeared in court, and the streets were clean. The number continued to decrease, until in February less than 100 were arrested.

The effect on exposures and infections is shown by the accompanying table in which it is seen that in the first month exposures, which may be represented by prophylactic treatments, were reduced nearly 300, while infections were practically cut in two, and this in spite of the fact that the strength of command shows an increase of nearly 3,000. As time went on, many other elements undoubtedly entered into the reduction; but there was apparently no other explanation

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* Read before the Section on Dermatology at the Sixty-Ninth Annual Session of the American Medical Association, Chicago, June, 1918.

[1] Statistics compiled by Lieut. Allison T. French, Sanitary Corps, U. S. N. A.

for this rapid reduction taking place immediately following law enforcement. Another point to be emphasized in the table is that in February the same judge was on the bench as in October, and he was the one of the four who rotated in this court who was most reluctant in agreeing to the government's demands. Consequently, we see during his month an increase in exposures and a corresponding increase in infections. This table apparently demonstrates that, to a certain extent, exposures and infections follow the enforcement or nonenforcement of law.

While this law enforcement will have a deterrent effect on a certain number of prostitutes, it should not be understood that the work ends with this or their medical treatment; if it did, it would be wasted since on release they would immediately return to their profession and become reinfected. It will be necessary that adequate provision be made for the permanent custodial care of the feebleminded, and for those confirmed offenders who can be forced into a life of decency only by long term commitments to reformatories. By bringing proper social service agencies in contact with the younger offenders, they may almost immediately be returned to society.

The professional prostitute is a prolific spreader of disease, as she nearly always has gonorrhea, which may be chronic in nature, and particularly because, if allowed to practice her profession openly, she daily exposes from ten to twenty or more patrons. From the standpoint of syphilis she is not so important, as she contracts it early in her career and thereafter is likely to take sufficient treatment to keep the disease under control. Clandestine prostitutes are a danger, not so much on account of the number of persons they expose individually, but because there are a great many more of them, and being youthful offenders, they are more likely to be acutely infected and less well informed as to the care of themselves and their patrons.

In the examination of several hundred prostitutes in San Francisco, Sperry[2] found only two or three with demonstrable lesions of syphilis. In an examination of 731 women, Stevens[3] found 147 infected with gonorrhea, 243 with syphilis, and ninety-six with both syphilis and gonorrhea.

In carrying out this work in California, nearly $100,000 was appropriated by various communities of the state, and special isolation hospitals were built in San Diego and Los Angeles. The one in San Diego has thirty-five beds, and the one in Los Angeles, fifty-four beds. San Francisco arranged for a ward of thirty beds in the San Francisco Hospital, and a budget has recently been passed for approximately $50,000 for next year, which not only will permit the carrying on of this work in the hospital, but also will provide for a place of detention at the County Relief Home, which will care for from fifty to 100 inmates. Many of the smaller communities of the state have arranged for the detention of such patients in their county hospitals. Generally speaking, there is greater need for places of detention with proper hospital facilities than there is for straight hospital quarters, as many of these persons are properly ambulatory patients.

There should be an effort to make investigations of appropriate groups, and institute treatment when indicated. In most cases state prisons provide adequate hospital and medical facilities, but rarely do we find any attempt made to examine and treat prisoners in city and county jails. Here we have a class of people who are naturally prone to have no regard for the rights of others, and who are likely to have syphilis or gonorrhea. Arrangements should be made for a careful examination, including a Wassermann test of every prisoner, and proper treatment instituted. If necessary, cases should be quarantined beyond the time of sentence, so that in no case would an individual be allowed his freedom while still in an infectious condition.

During the months of February and March there were examined in the city and county jail in Los Angeles 681 male and female prisoners, 389 of whom were infected, and more than 7,000 treatments were given.

An examination was recently made of forty-three women and 145 men in the Minneapolis City Workhouse. Of the women, fourteen had gonorrhea, nineteen positive Wassermanns, and six had both syphilis and gonorrhea. Of the men, seven had gonorrhea, fifty had positive Wassermanns, and two had both syphilis and gonorrhea, thus making a total of seventy-seven diseased persons out of 188 examined. In general, when surveys have been made of the inmates of jails, approximately 20 per cent. have been found to have syphilis, and nearly 50 per cent. to have syphilis or gonorrhea. These figures indicate the great need that this work be undertaken with this class of people, who, we must realize, will not take the care of themselves necessary to prevent infecting others.

DISPENSARY PATIENTS

Investigations have shown that not more than from 30 to 50 per cent. of the patients infected with gonorrhea or syphilis receive adequate medical service at the hands of private practitioners. This has been due partly to the fact that many physicians are not sufficiently trained in the care of these diseases, and partly to the fact that a great many patients coming to them could not afford to pay for sufficient treatment to arrive at a cure. It is also a fact that a large number of patients, particularly of the poorer classes, go to drug stores, and, of course, it is obvious that treatment received in this way is worthless.

Investigations of certain dispensaries in the East have shown that approximately 50 per cent. of their men patients with gonorrhea attempt drug store treatment before they come to the dispensary.

If there is an insufficient number of specially trained physicians, and if the majority of the people cannot afford to pay the fees of specialists, it is perfectly obvious that there is a great need for more and better dispensary facilities, where people can obtain either free, or for a nominal sum, expert services. We should remember in this regard that we are not concerned entirely with the individual patient, but that to a certain extent we are providing for him in order properly to protect the community. The fact must also be emphasized that unless all of these cases are treated until cured, not very much is accomplished from the public health standpoint. This, of course, is more true of gonorrhea than of syphilis, since the one is infectious so long as present, whereas the other may be rendered temporarily noninfectious. But the great need is to place patients in such a condition that they will not be dangerous to others, and this means, generally speaking, a cure.

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[2] Sperry, J. A.: Venereal Disease Control in San Francisco by the Board of Health, California State Jour. Med., 1918, **16**, 120.

[3] Stevens, W. E.: Gonorrhea in Women, California State Jour. Med., 1918, **16**, 260.

The man or woman who can afford to pay for only a little treatment should be sent at once to a dispensary or hospital where sufficient and expert treatment may be received.

Pressure should be brought to bear to see to it that every hospital supported by public funds admits all syphilis and gonorrhea patients on exactly the same basis as other patients are admitted, as there would seem to be no sense in their refusing on the one hand to admit active cases of gonorrhea or syphilis, while on the other hand, it is a fact that their wards are continually filled with the end-results of both of these diseases.

The problem of dispensaries is more acute in many of the smaller cities of 40,000 or 50,000 population than it is in the larger cities where there are already in operation either city or university clinics. It is being proposed, therefore, in many of the states, that a number of dispensaries be established in proper places throughout the state, either directly under the state board of health, or, at least, stimulated and officially recognized by it. In states in which there is a sufficient appropriation, a subsidy will be granted communities to assist in establishing these dispensaries, and it is quite possible that by making a nominal charge for treatment the dispensaries can be almost self-supporting.

In nearly all states in which the work is going on, provision is made for free arsphenamin, and these clinics can be made the official distributing points for this treatment. This plan is in accordance with the program that is being followed by Great Britain, namely, that of the federal government stimulating the organization of such clinics, and providing for 75 per cent. of the expenses, while the local communities take care of the other 25 per cent.

Unless the work of these and all other dispensaries is developed to conform to certain standards, the results will hardly be a success. But if certain standards are required such as the provision of a trained staff, sufficient rooms and equipment, nurses and social service workers, good results are almost bound to be attained. There are two distinct ways of insisting that these dispensaries be run according to standards laid down by the state board of health. In many states the board of health has the power to license dispensaries, and definitely control them, and in others, it will be possible by withholding official recognition, or by withholding the free arsphenamin, to see that the standards are followed.

It is very important that the states supply free laboratory service for the diagnosis of both gonorrhea and syphilis.

In California many local health departments were already operating dispensaries in connection with their work, and in many of these a department of venereal diseases was added. In San Diego such an outpatient department was instituted for both men and women. In Los Angeles an evening clinic for men was already in operation, and this has been enlarged, with very much better equipment, and now provides adequate service for both men and women. In May this clinic registered forty-six new cases, and had a total of 136 patients under treatment. San Francisco has depended in the past on the dispensaries of several medical schools. Their new budget, which has been granted, provides for a day and evening outpatient clinic for both men and women at the San Francisco Hospital. In Fresno the county hospital arranged for a ward for venereal diseases, and instituted an outpatient service, with a proper social service department, and within a month's time had thirty-five cases of syphilis under treatment. In Bakersfield a similar arrangement was made at the county hospital. In Santa Barbara a new contagious disease hospital is near completion, and arrangements have been made to have a portion of this devoted to venereal diseases. In Oakland and Sacramento the local health departments have both inaugurated clinics for venereal diseases.

In Minnesota arrangements are being made to open a municipal dispensary in St. Paul. The City and County Hospital already provides about twenty-five beds for venereal disease patients. In Minneapolis the University Dispensary has adequate clinics for syphilis and gonorrhea, and the University Hospital has recently set aside twelve beds for these patients. In Duluth a clinic will probably be established under the local health department. Arrangements have been completed in these three cities for examination of all police court cases, and their quarantine and treatment when necessary.

In connection with these dispensaries, and cases placed under quarantine from the courts, there was distributed up to March 31, 1918, in California 1,660 doses of arsphenamin. This was distributed to thirty-two different dispensaries or health departments, and was given to 393 patients. For the most part, these were a class of people who under former conditions would have received no treatment. In view of the fact that these patients received an average of more than four doses of arsphenamin within this rather brief period, it is felt that a piece of work worth while has been accomplished. These patients also received mercury by inunction or injection.

PRIVATE PATIENTS

Adequate provision must be made for the treatment, and especially for the control, of private as well as indigent patients. This necessitates the passing of laws or rules and regulations, by the state board of health, under which these patients can be required to take the necessary amount of treatment.

There should be a system of notification identifying in some way those persons venereally diseased, and providing for a report of the name and address of the individual who does not so conduct himself as not to endanger others. The health officers should be responsible for the control of these individuals when they are reported. A rule should also provide for parents and guardians being responsible for the compliance of minors. In all cases reports are strictly confidential. Many physicians believe that notification is bad, as it is thought that it will have a tendency to drive patients away from them, and into the hands of druggists and quacks. The public in general, and patients in particular, should be informed carefully of the confidential nature of these reports, and that so long as they as patients continue under treatment and conform to the necessary rules and regulations, their names and addresses need not be divulged, nor will there be any difference in the relationship to their physician on account of this work.

California has had for several years a law requiring the reporting of these cases by number, but no definite effort ever has been made to enforce it. Since the campaign was undertaken, however, their reporting has increased to more than three times the amount for the previous year. In Minnesota we are just preparing to inaugurate this work by circularizing all the physicians and asking their support for the government program. Many states in which reporting is now going on report the complete cooperation of the medical profession.

So far as we are concerned with the druggists, rules should be passed which will prevent counter prescribing, or the sale of any preparation or nostrum in the treatment of syphilis or gonorrhea. This sort of treatment means the loss of a considerable amount of time to the patient, and also in most cases it means that the patient, when finally presenting himself to a physician, has a chronic, difficult case, rather than an early case in which proper treatment can be very much more successfully given.

There is also a point in connection with this which distinctly concerns the Army and Navy, and indirectly also the civil population, and this is the treatment of soldiers or sailors by drug stores. This is to be condemned for two reasons. In the first place, on account of the men themselves getting inadequately treated, and in the second place, because it prevents the Army surgeon from placing these men under control, since the rules in the Army and Navy are that no such infectious patient be granted a leave of absence from the camp, and in that way any infection to the civil population is prevented.

By preventing the advertising of quacks, and by proper education of the people, it would seem possible to put the obvious quack or faker out of business. But it will be rather more difficult to restrain certain otherwise reputable physicians who persist in practically labeling themselves "quacks" so far as venereal diseases are concerned, by agreeing to cure these diseases quickly for stated fees. Generally speaking, the control of these patients who go to private practitioners depends almost entirely on the hearty cooperation of the medical profession, both individually and collectively. It is to be hoped, particularly at this time, when the value of this work to the federal government is so great, by reducing the disability among soldiers and sailors, both present and prospective, and among the vast army of industrial workers, that all physicians will pledge themselves to this cooperation.

EDUCATION

The systematic education of both laity and physicians as to the danger of these diseases, to their prevalence, and to the needs of adequate treatment, is the most important of any single method of attack. This should be directed along two distinct lines. In the first place, a campaign should be undertaken to get information to both laity and physicians from the disease standpoint. This should include lectures, distribution of pamphlets, setting up of placards in public comfort stations and other appropriate places, and various other means of publicity. Lectures should be given to various groups of men and women, and to county medical societies, both relative to the diseases and to the program for their control. A pamphlet on the treatment of these diseases should be furnished to physicians, as well as one containing information and instructions to be given patients. A carefully planned exhibit and stereomotorgraph with proper slides may also be used very successfully in various communities.

The other part of the educational work is directed toward those who in turn will be teachers, and is not limited in its scope entirely to venereal diseases. Courses should be arranged for in every state university, and in all normal schools. These courses should cover biology, psychology of sex, sociology, sex hygiene and venereal diseases. Courses should be given in medical schools with particular reference to the public health side of the problem. Courses should be given to hospital, public health and school nurses. Under the educational department a course of study of sex education should be planned for parents' and teachers' associations. Communities should be stimulated to the further use of present recreational facilities. The need and the part this work plays in stimulating a normal sex life in the young should be emphasized. This is particularly a great need in the rural communities.

I believe one important detail of the educational work should be giving people to understand that something can be done if exposure has already taken place. This may be called early treatment, or prophylaxis, as one wills. Its value has been fully demonstrated by the Army; of that there can be no question; but there is the question as to how this information should be given. I myself believe such information should be given individuals at the time of their attendance to the hospital or dispensary, and that people should be urged to go to these places for advice; but I do not believe that the public in general is willing to have such information spread broadcast to the youth of the land, nor do I believe that it would be proper on our part to advocate the sale of a prophylactic package, since that savors of the very drug store treatment that we are attempting to discard.

In connection with the educational work in California, forty lectures were given in cooperation with the War Department's Commission on Training Camp Activities, which reached approximately 55,000 enlisted men. A limited number of lectures were given to certain groups of people throughout the state, and a definite campaign for work along this line has been outlined. A number of sets of posters furnished by the American Social Hygiene Society were placed in various Army and Navy camps. A stereomotorgraph with proper slides was purchased, and sent first to Camp Kearney, at that time the largest cantonment in the state, and from there to others in different localities. Approximately 2,000 placards with information on venereal diseases were distributed and placed in the latrines of the Army and Navy camps of the state. Approximately 1,600 were distributed and placed by local health officers. About 6,000 pamphlets on venereal diseases, and 5,000 on the modern treatment of syphilis, were distributed throughout the state during the six months' period.

In Minnesota we feel that our educational program is well under way in view of the time elapsed. During the past winter complete courses were given at the university, and at a number of the normal schools of the state. Dr. Ulrich, who has charge of this work, has given fifty-five lectures to approximately 10,000 people. A number of different pamphlets have been issued and are being distributed. An exhibit is being planned and a stereomotorgraph with complete sets of slides has been ordered. A copy of the War Department's film "Fit to Fight" has also been ordered and will be shown to all enlisted men.

CONCLUSIONS

The program as proposed, and as put into force by the War Department, has already been proved a success by the fact that our armies now have the lowest venereal disease rate of any army in the field, and for weeks the rate of the expeditionary forces has been only about half that formerly averaged by our Regular Army. The program as proposed for civilians is along the same lines and is intended to be carried out in cooperation with the Army and Navy. There is every reason to believe that it will also be successful, particularly if it receives the support of the profession. There is a good opportunity for the private practitioner to show his desire to help by complying with all rules and regulations and by doing as much individual educational work as possible. The specialist who does not enter the Medical Reserve corps has an opportunity to serve at home by taking an active part in this movement, by lending his assistance with his special training, not only in working out problems, but by giving some time to dispensary work in his community.

There is need for the federal government to come to the state's aid in the way of finances just as England has done, and such legislation is now before Congress. With this assistance, the work will go on much more rapidly.

Emphasis should be placed on the educational work, particularly in the medical schools, as the people at large depend on the physicians for information concerning these diseases, and unfortunately the majority of the medical profession have little idea of the modern conception of sex hygiene or the public health point of view of the problems of prostitution and venereal diseases. This is due primarily to a lack of teaching of these subjects in the medical colleges.

A well rounded program for combating venereal diseases must take cognizance of every factor that enters into their spread. Any attempt to limit the work to any one field will fail, just as medical efforts at reducing venereal disease through attempted regulation of prostitution has always failed. In its last analysis we must agree with Surgeon-General Gorgas that venereal diseases depend on sex immorality for their spread; and until we do away entirely with immoral sexual relations, we cannot do away entirely with these diseases.

601 Syndicate Building.

ABSTRACT OF DISCUSSION

ON PAPERS OF DRS. PUSEY, FORDYCE AND IRVINE

Dr. John E. Lane, New Haven, Conn.: The work which Dr. Pusey and his associates have done has already given such definite results and has been demonstrated to be of so great value that it cannot help assisting in the adoption, by other states, of the plan suggested by Dr. Irvine for the prophylactic measures which he has already introduced in several states. It is interesting to know that the value of the prophylactic measures adopted in our Army has already been recognized in France. You may remember that Fournier, in 1901, established the Society of Sanitary and Moral Prophylaxis in Paris, and planned prophylaxis on the lines that we have adopted. The measures suggested have never been taken very seriously by the majority of French physicians. A short time ago Sabouraud visited our army camps in France and gave a most flattering report of the result of the prophylactic methods used by our Army. He at the same time deplored the fact that the French, who first originated the plan and methods of prophylaxis, had to be shown how to put them into operation by the Americans.

We are all indebted to Dr. Fordyce for his insistence on the need of examination of the spinal fluid in cases of syphilis and for his persistence in demonstrating this need. We are also indebted to him for his persistence in demonstrating the need for organized hospital and dispensary facilities for the treatment of syphilis. It must be a cause of gratification to him to see that his efforts are beginning to bear fruit.

Dr. Irvine has been one of the leaders in the movement for getting the venereal diseases under the control of the state health authorities. The value of his work is best shown by the fact that several states have adopted plans similar to those which he has put into execution. I am glad to say that my own state is one of them.

Dr. John H. Stokes, Rochester, Minn.: I have myself been converted from a stand of opposition to intraspinal medication to the point where, while not an enthusiast, I am prepared to admit that at the hands of a man like Dr. Fordyce it is possible to produce results which cannot be duplicated by the conventional methods. On the other hand, I still feel that intraspinal therapy is a final rather than a first resort and that it should not be undertaken by the tyro. At the hands of the profession at large intradural therapy has been sadly overdone. This, however, is by no means a reflection on the method, but rather on those who have let enthusiasm get the better of their discretion. The results mentioned by Dr. Pusey and Dr. Irvine have interested me greatly. My personal hope is that state programs, however excellent, will not be allowed to overshadow the need for a really national campaign against venereal diseases.

Dr. King Smith, Toronto: Men with well-marked psoriasis should not be taken into the Army. They live in huts and tents with other men and often such men are put down as syphilitic and their life is miserable. It is the same with many other diseases. Many cases of typical psoriasis and other diseases are considered syphilis, and it is hard to change the diagnosis. The soldier's pay is altered, as you know, and that man does not start in with a fair chance. I would like to suggest to Dr. Pusey that they think of the returned men. They will soon be sent back in great numbers with the loss of a leg or an arm and syphilis. The man cannot be kept in the Army, and you must find some way in which those men can be treated thoroughly in a civilian capacity. In Canada we have formed a league whereby these men can be gotten out of uniform but still receive care. The more you serve the more you will protect your other countrymen. You must give them every chance in this game, for they have given up everything for us, and we must protect them and when possible train the men not to put down syphilis against a man's name until he is sure of it. Get him back to the base hospital where he can have thorough treatment, and then make the diagnosis.

Many diseases have been put down to nervous origin. I found thousands of such cases soon after the evacuation of Gallipoli, where I happened to be. I saw only a very few irritated cases, never a lichen planus, and what struck me was the marked absence of nervous disease after going through that great campaign. The great thing I saw was the ecthyma group, which is often put down as syphilis. The men necessarily cannot change their clothes, the pediculosis is extreme and the ecthymoid conditions are very severe, forming great ulcers which look like tertiary syphilis, but are not. We sometimes do a routine Wassermann on a returned man, but I do not think this is justice to the man. If the man has not shown evidence of syphilis in the Army and you find the Wassermann positive, it goes down in the history sheet, he has to go down and take treatment, and if he refuses to do so it goes down on his chart and so becomes public property. The returned man, unless there are marked lesions, should be gotten out of the Army and in that way protected. If he is in the hospital his wife and friends come to see him, and everyone soon knows that he is attending a clinic for venereal disease if that plan of treatment is adopted. I do not believe in the long treatment of syphilis while the men are in the Army. If you can get the lesions cleared up, send them back to the trenches as soon as possible. They have as much right to be there as the healthy, sound men.

Dr. A. Schuyler Clark, New York: I have been in the Army for one year and up to the present time have never given a pink pill. My work has been entirely administrative and has consisted for nine months of medical administrative work in a division and three months in a base hospital, so I am inclined to look at this question from the point of view of efficiency in the Army and of administration. The point of putting a case of venereal disease in the hospital has two sides. There is no question that every acute case should be in the hospital, but there is a very decided objection to keeping them in the hospital too long. There is a great tendency for some soldiers to get "hospitalitis" or become hospitalized, and once that has happened it is extremely hard to get them interested in an organization again and anxious to go to the front, as all our soldiers are. A member of our organization is doing most efficient work at Camp Grant. I refer to Major W. L. Baum. The idea of getting venereal patients out of the hospital and having them treated by their organization is being urged by him. It is being tried out at the present time at the Depot Brigade at our cantonment, where they receive the new men coming directly from civil life. A venereal infirmary is being established there for the treatment of venereal patients in order that they may be gotten out of the hospital as soon as the acute stage is over. I am convinced that from the point of view of efficiency in the Army this plan is along the proper line. I believe that soom a division infirmary will be organized and there it will be important for an experienced venereal surgeon to teach the treatment of venereal diseases to the regimental officers of the detachment, requiring at least one regimental officer to report at this venereal infirmary and learn how to take care of venereal cases. I think that will be a future development in the Army. It is now being put into effect at Camp Grant. These soldiers do not wish to become hospitalized. I should like to tell you how appreciative the officers at Camp Grant are relative to the efforts being made to prevent prostitution in Rockford. I have never seen a cleaner city than is Rockford. It is rare to find a so-called new venereal case. The women of Rockford meet the trains and a questionable woman is approached by these women and advised that she had better return where she came from. If this is not effective, supervision is kept over her, and sooner or later she is put in jail or gotten out of town. This has a splendid effect on the cantonment in the prevention of venereal disease. There is no question about the effectiveness of prophylaxis. Another element which I consider of very great importance is the abstinence from alcohol.

Dr. Henry R. Varney, Detroit: Dr. King Smith was speaking of the proper treatment of the returned soldier, but I think there is another point, and that is the duty we owe to the returned soldier's family. I should like to ask what is being done to prevent these returned soldiers from infecting their wives and children with gonorrhea and syphilis.

Dr. Fred Wise, New York: As I have the good fortune to be one of the few men in the room who is associated with Dr. Fordyce, I will confine my remarks to a discussion of his paper. In his recent writings his aim has been a campaign of education for the physician more than for the layman. The question of neurosyphilis has occupied his time for several years, but in spite of the fact that he has an overwhelming supply of data to present it may surprise you to know that in our city of New York many doctors not only do not follow his precepts in the treatment of neurosyphilis, but actually decry the value of spinal punctures. Dr. Fordyce's reports are based not on imagination, but on careful scientific data which have accumulated after years of hard labor. Naturally I can appreciate the work which he has presented to you today, because I have before me every day the results of the spinal treatment of neurosyphilis. If the handwriting on the wall be interpreted correctly, every doctor, specialist or practitioner will not only have to master the subject of spinal puncture in every case of syphilis, but also the treatment of neurosyphilis on the lines laid down by Dr. Fordyce.

Dr. James Herbert Mitchell, Chicago: Many of the criticisms of intraspinal methods are incident to the dangers of that treatment. The original Swift-Ellis technic was designed for those cases which did not respond to the intravenous method. In our work we have limited our cases to those which did not respond to other treatment. The criticism which Dr. Stokes brings against the method will apply equally as well to the intravenous method. We have all seen a great many cases which have been markedly mistreated with the intravenous technic. That is not a criticism of the method, but of the clinician. During the past year I saw a patient in the dispensary who had had eight intravenous treatments. She had a hemiplegia and intense headache, which was not in any way relieved by intravenous injection. Spinal puncture showed 1,000 cells per cubic millimeter. One intraspinal injection of a large dose of undiluted serum gave her relief from the headache, and two further treatments relieved practically all the objective as well as the subjective symptoms.

Dr. Loyd Thompson, Hot Springs, Ark.: I wish to mention one or two things in regard to venereal prophylaxis in the Army which Dr. Pusey did not touch on, the enlisted man on furlough and the officer on leave of absence. I found that 8 per cent. of our men who contracted the disease did so while on furlough. We are not able to control their actions on those occasions, and they have no prophylactic material with them. It is my idea that it would be a good plan to furnish all men who go on furlough with a prophylactic kit of some sort. A man may go on pass one night and indulge himself and come back and fail to take the prophylaxis. He will go on pass again the next night, will not indulge himself, but will take the prophylaxis. He is within the law, so far as the Army regulations are concerned, and we have no way of knowing when the infection occurred.

In the matter of treatment: As long ago as last October I advocated establishing dispensaries in the divisions. Our division surgeon did not approve of it and we did not get as good results as we might have. We have now established a division dispensary which will take care of all ambulatory cases of venereal disease.

Dr. M. Scholtz, Cincinnati: In discussing sanitary control of venereal diseases we must differentiate clearly between the military and civic aspects. The military problem is so thoroughly and efficiently controlled by the federal government that we, as physicians, have no cause for anxiety as to the results sought for. The civilian problem is infinitely more difficult and complex. We should realize that the main reason why the venereal problem is so difficult of solution is because venereal diseases are social and secret. The medical profession as a body cannot render a greater service to society than by educating and molding its mind in this direction. When we have accomplished this our difficulties will largely cease. I believe, in this sanitary crusade of social hygiene, we should rely more on the educational campaign and more liberal attitude in the matter than on the oppressive legislation or on the raids on shady hotels. We should not judge the effectiveness of our clean-up efforts by the number of arrested women of ill repute. The effects of these measures are always transitory and local in character. We all know that these undesirable female characters, when driven out of one city, land in another community. We simply transfer our burden temporarily to our neighbors. From this viewpoint it is high time for the medical profession to urge the government to organize a national commission for the study of venereal diseases from every possible angle—medical, social, educational and economic—a commission which would insure a concerted action on the national scale and rational methods of solution.

Dr. E. H. Martin, Hot Springs, Ark.: Referring to Dr. Brown's paper, I wish to call attention to one factor which may have led to error; that it, that his experiments were made on rabbits with the initial lesion. Any one who has treated many cases of chancre must realize that the chancre is the most resistent of all syphilitic lesions to treatment until you come to the cerebrospinal colonies. Many organisms reside in the chancre, many of them in an unkillable stage, and the drug does not have the effect on them that it does on the ordinary forms of spirochete. Very often an indurated lump will remain at the site of the chancre for weeks after healing; very often ten doses of ordinary arsphenamin have been given before such a lump would soften. I believe if the experiments could be carried out on animals in the secondary stage, after the chancre had softened, they would be more valuable in determining which of the drugs is most curative.

Dr. Franklin R. Wright, Minneapolis: If we may believe the writings of Havelock Ellis, there has been only one race of people discovered who did not have prostitutes, and they had polygamy. The question simply comes down to one of sex; the male has strong sexual desires, while the female has maternal desires. Applied to the human race, the male is a natural Mormon and the female is not. It is simply a matter of sex all the way through. One of the leaders on sex questions has stated that if a man of 35 brags that his will is so strong that he has never had intercourse, that man is boasting of the weakness of his sexual powers instead of bragging of the strength of his will power. The question is, Are we willing to teach the general public that all unmarried men have intercourse, and that the state has cured all persons having illicit intercourse of contagious disease and made fornication as safe as possible? Are we ready to go so far as to teach the public that there are measures which they can take by which the chances of infection are reduced to the minimum? If we are ready to teach the young boys and girls these things, well and good. The Army is a different proposition. It is a well-known fact that the men who do the heavy physical work are not the ones that have strong sexual desires. The men who do the mental work and live sedentary lives are the ones who have the strong desires. Army life is a fairly active life.

There are reasons why the Army shows great diminution in the amount of venereal disease. All these cantonments are in small communities. The number of prostitutes in any community is in proportion to the number of unmarried males. More than this number cannot find lodging suitable to their vocation. This is the situation at Rockford, Ill.; Battle Creek, Mich.; Camp Kearney at San Diego, Calif., and other places. At Camp Custer, Mich., between October 1, 1917, and December 15, 1917, there was only one young man admitted to the Base Hospital who had acquired his infection after entering the Army. There were no prostitutes at these places, except a few to take care of the needs of the unmarried men among the 30,000 people living in Battle Creek. This reason will apply to Camp Kearney, Calif., the same as at Camp Custer, Mich.

Dr. Wade H. Brown, New York: In experimental therapy we have to take such conditions as we find them and make the best use of them. As to the use of the rabbit for experimental purposes, well developed and enduring primary lesions are relatively easily obtained, while there has been a great deal of discussion as to the extent to which a true generalization of the infection with secondary lesions follows a local inoculation. In recent years we have found that a true generalized syphilis does occur in the rabbit in many instances and that secondary lesions may appear even as late as sixteen or eighteen months after inoculation, but such lesions may be very transient and, as a rule, are much more easily influenced by treatment than the primary lesions. Further, when treatment is instituted during the primary stage of the infection with consequent healing of the initial lesions, if a true cure has not been effected, secondary or generalized lesions may appear later in a considerable number of animals and this is particularly true of certain drugs, as instanced by the results reported with various arsphenamin preparations. For these and other reasons which we might mention, it seems better as a routine procedure to treat experimental animals during the primary stage of the infection and to rely on the subsequent development or absence of generalized lesions during some four to six months than to treat the more transient and more easily influenced secondary lesions. Under the circumstances, this is all one can do, as a rule, and the results obtained from such experiments furnish reliable presumptive evidence as to the therapeutic action of the drugs used.

Dr. William Allen Pusey, Chicago: I would like to call Dr. Wright's attention to the fact that the reason there are not more women in Rockford and Battle Creek is not because there are not more prostitutes that might be available for these districts, but because it is a part of the Army work to keep them away.

Regarding the question about what to do with cases of venereal diseases after the war, this is undoubtedly very important, but so far there has been considerable to do to take care of the venereal cases during the war, and not much has been done as yet toward the care of them after the war. The protection of the family against venereal disease while the man is in the Army is pretty well taken care of by the fact that these men are not allowed to get away.

Regarding the percentage of venereal disease, the Army program has taken some pride in the fact that it has not been an unworkable program. I do not mean that it is ideal, but only a fair standard at the present time.

Dr. John A. Fordyce, New York: I had no intention of presenting the subject of intraspinal therapy in neurosyphilis, but as this has been touched on by several of the gentlemen I will briefly refer to it. In order to obtain results by the method in question one must have a very clear conception of the various conditions present. In other words, indications for or against this therapeutic procedure are afforded by the results obtained from an examination of the spinal fluid. Early meningitis may occur before, during or after intensive treatment. These cases can best be controlled by intraspinal injections. In tabes, with a relatively high cell count and positive Wassermann, if the degeneration be not too far advanced, we can anticipate further degeneration, relieve the pains and cure the crises in the majority of cases. In optic atrophy, with the preservation of one half or one third of the vision with positive findings in the fluid, we can arrest in the majority of cases the further progress of the atrophy.

Many neurosyphilis patients come to me in my private work and in the clinic who have had a large amount of treatment of arsphenamin and mercury. It is useless to continue the ordinary methods of treatment in such cases. They are treated intraspinally if the indications afforded by the spinal fluid examination point to an involvement of the meninges. Many cases of disseminated cerebrospinal syphilis which have not been cured by ordinary treatment have been cured or greatly benefited by the method in question. In the past five years we have treated about 170 cases of various types of neurosyphilis and have obtained a negative cell count and negative Wassermann in 2.0 c.c. of fluid in about 30 per cent. of the cases. We do not consider the patient cured until we obtain a negative Wassermann with the larger quantities of fluid. As to the benefit to be expected in paresis we cannot say as much. There are, however, borderline cases of meningo-encephalitis which simulate paresis and which have been cured. In the routine examination of the spinal fluid in the various types of neurosyphilis we frequently meet with patients who give a four plus (++++) Wassermann in 0.2 c.c. and a paretic colloidal gold curve. Although these cases presented no stigmata of degeneration, we consider them potential paretics. In these cases treatment probably delays for a long time the development of the later degenerative stage.

Dr. Harry G. Irvine, Minneapolis: In regard to the returned soldier, the federal government should notify the state boards of health of any diseased man coming into their district. Where the program which has been suggested is enforced it would be possible to have these cases taken care of in their dispensaries. This program provides for this very thing and not only for the care of the returned soldier, but will also protect his family and the community as necessary. I am sure that the Surgeon-General's Office has gone into this matter and that it will be given serious consideration. The relationship of prostitution to venereal disease can hardly be settled in two or three minutes' discussion. It is possible to do away with commercialized prostitution, which is not in business to take care of the demand but to create a demand, and this can and should be done away with. So far as control of prostitution is concerned, it is worthless to institute any form of medical examination to attempt to make it safe. In any attempt at regulating prostitutes it has never been possible to register more than 10 per cent., and it is worthless to adopt any program which can be applied to those registered and not to the others, who are in the majority. So I cannot see that it will ever be possible to make the prostitute safe, so far as venereal disease is concerned. I think that the habits of the male have a great deal to do with the amount of intercourse. If a man is in the habit of doing without for a long time he can do so very nicely. The question of alcohol, whether a man is working or not, and the nature of his work all enter into it very largely, but as time goes on and we have better sociological conditions we will likely develop a race of men who will get along with much less intercourse than has been the case in the past, even if such a thing is not the case at present.

The question of making prostitution safe brings up again the segregated district, and that has been shown to be an absolute failure, so far as venereal disease is concerned. Many of the best authorities have gone on record, publicly stating it as their opinion that any attempt at medical regulation has always been a failure so far as reducing venereal disease is concerned. I think that until we are as well informed as those men are it is hardly good form for us to question the statements which they make.

THE QUESTION OF OPERATION IN GUNSHOT ABDOMINAL WOUNDS *

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The study of gunshot wounds of the abdomen deals with one of the most interesting chapters of the major wounds of war, especially by reason of the numerous controversies relating to a general plan of treatment of abdominal wounds. Certainly the present war has developed important advances in this department of surgery.

In previous wars it was held as dogma that gunshot wounds of the abdomen should be treated expectantly and conservatively, as distinguished from the teaching of prompt operation in civil practice. At the present time, it may be said that the weight of opinion is in favor of applying in military practice the civil method of immediate operation in all penetrating wounds of the abdomen wherever the favorable conditions of civil practice can be provided. These essential conditions include a skilled operator, trained assistants, a sufficient armamentarium, an aseptic environment, and the time in which to operate. Practically all agree that it is better to await the establishment of these conditions before attempting to operate.

It is likely that the best explanation of the improved statistics of operation in this war is to be sought in the favorable conditions of trench warfare, the battle lines being in the main more stable than in former wars, and allowing of better preparation for operating near the front.

Chalier and Glénard[1] express the view of most war surgeons in all armies when they say that expectancy is a "snare and a delusion." It is permissible only when twenty-four to forty-eight hours have elapsed since the injury, when operation could do no good. In this event, they advise that no food should be given and the man should not be sent back any distance until after six weeks.

Notwithstanding the fact that the experiences of the present war have modified the old views as to the advisability of abstention in abdominal wounds, there still remains, notably in France, a rather sharp division between what are designated the abstentionists on the one hand and the interventionists on the other. The former group bases diagnosis of penetration and perforation, as well as treatment, on the evolution of symptoms; the latter group makes the complete diagnosis by laparotomy, applying appropriate surgical treatment immediately or within the first few hours. Unfortunately, the most experienced surgeons occasionally find more or less difficulty in diagnosticating penetration and perforation before operation, and all are, of course, opposed to precocious operating in nonpenetrating wounds.

There is not always present an aperture of exit, in which case it is difficult to determine the course of the missile. All missiles may ricochet. I have witnessed wounds in which, if the missile had traversed the shortest route between the two openings, there would have been perforation of many vital organs and structures, and yet there was no serious injury.

There are a few recognized rules to follow; for example, the closer together the wounds of entrance and exit, the less the chance of penetration. And Rochard[2] declares that if a wounded man does not cease to complain of abdominal pain, a perforation is almost certain. Rochard also says that if a patient passes gas at the anus, there is no perforation.

All rules fail sometimes, with the exception of these three which prove the existence of perforation: escape of bowel contents from the wound of entrance or exit; protrusion of perforated intestine at the wound, and passing of the missile by the anus. Schwartz and Mocquot[3] describe four cases of perforation showing no signs. I have observed the case of a man with perforating wound of the abdomen who continued active duty for several hours after receipt of the wound, having no knowledge of the injury. Six hours after injury, the abdomen at operation was filled with blood.

Among the common signs of perforation are pain; vomiting; hiccuping; costal breathing, due to immobility of the diaphragm; the syndrome of shock; boardlike rigidity of the abdomen (*ventre du bois*); retraction of the testicle to the external abdominal ring; change in shape of the abdomen, for example, the "ventre bilobé" from meteorism; emphysema as in colon wounds; tympany; temperature changes, etc. To these may be added the symptoms of intra-abdominal hemorrhage. A true interventionist does not, of course, await the appearance of all these symptoms, since one may suffice to determine the propriety of operating.

CONDITIONS DETERMINING OPERABILITY

Among the deciding criteria which determine the advisability of operation are the following:

1. The kind of missile. A smooth undeformed bullet as a rule makes a small canal in the abdominal wall and a small easily sutured opening in a hollow viscus unless the shot be tangential to the intestine. Such a smooth bullet, however, usually produces an irregular laceration of a parenchymatous organ. The aperture of entrance being smaller and more clear cut than the aperture of exit. Irregularly deformed bullets naturally produce larger and more ragged wounds than do smooth ones. For example, the fragmented nickel or steel mantle partially split off and projecting from a lead center bullet may do great damage. Large

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* Read before the Section on Obstetrics, Gynecology and Abdominal Surgery at the Sixty-Ninth Annual Session of the American Medical Association, Chicago, June, 1918.

[1] Chalier, André, and Glénard, Roger: Rev. de chir., 1917, **53**, 124.

[2] Rochard, E.: Bull. et mem. Soc. de chir. de Paris, 1915, **41**, 2182.

[3] Schwartz, Anselme, and Mocquot, Pierre: Rev. de chir., 1916, **51**, 56.

grenade fragments do not as a rule penetrate deeply, but often cause extensive crushing and laceration of the abdominal wall. Small grenade fragments often do very little injury, but may produce a deceptive wound; that is, the wound of the abdominal wall may seem insignificant, whereas the intra-abdominal injury is extensive and serious. Shrapnel balls often remain impacted in the abdominal coverings. They are of low velocity and usually retain their smoothness and rotundity and do comparatively little damage to viscera, considering their large size. They rarely completely traverse the abdomen. Shrapnel wounds are usually infected because the low velocity missiles push into the clothing, whereas the small, high velocity rifle bullets cut clean, small wounds and do not often carry in fragments of the clothing.

2. The length and character of transportation required to bring the patient to the place of operation. Koerte places the limit of operability at twelve hours, and Chalier and Glénard at twenty-four hours, and the records of all show that the operative mortality percentage rises rapidly with each hour during which operation could be done after the subsidence of shock.

TABLE 1.—STATISTICS OF ABDOMINAL WOUNDS TREATED BY THE ABSTENTIONIST METHOD

Surgeons	No. of Cases	No. of Deaths
Barbet and Bouvet..	11	10
Bichat	21	16
Cadenat	9	3
Chaput	4	4
Chavannaz	38	22
Chevassu	85	27
Delore	100	100
Didier	3	0
Dupont and Kendirdjy	40	40
Gatelier	12	12
Gaudier	75	69
Gosset	5	5
Hourtoule and Barbier	7	4
Latarjet and Cotte ..	5	5
Leriche	117	105
Carried forward ..	532	422
Brought forward	532	422
Lorin	10	8
Marquis	68	36
Meyer and Taylor...	41	17
Pascalis	10	7
Pellot	12	6
Picqué	16	11
Proust	33	33
Rouvillois	67	60
Schwartz	10	7
Sencert	58	45
Stern	50	46
Tartois	8	8
Vignard	11	2
Weiss and Gross....	57	49
Total	983	760

Proportion of mortality, 77.3 per hundred.

3. The stability or nonstability of the place of operation determining whether the patient may require transportation soon after operation.

4. The factor of time, that is, the question as to whether time can be given for the operation without neglect of other wounded.

In any case, before operation is undertaken, the interventionist excludes simple, nonpenetrating injury of the abdominal wall. Likewise, he considers the question of whether conservative treatment, under the circumstances relating to the wound, the patient's general state and surrounding conditions would not be better.

INTERVENTION VERSUS ABSTENTION

At the beginning of the war, nearly all surgeons were abstentionists. For example, Aug. 10, 1914, in an address to the Academy of Sciences, Delorme advised against intervention, saying that experience in the Transvaal and in the Manchurian and Balkan wars justified the expectant plan, but the records of the interventionists are better in this war, as shown in Tables 1 and 2, taken from Chalier and Glénard.

It should be noted that the interventionist verifies his diagnosis of perforation, or, in the French nomenclature, penetration with injury of the viscus; whereas, the abstentionist may designate as perforation cases some which are not perforative. M. Chevassu, who was an abstentionist, not by choice but by unfavorable circumstances, had only twenty-seven deaths in eighty-five penetrating gunshot wounds, but according to French writers, many of these were doubtless cases of simple penetration without any injury of an important viscus. Moreover, the interventionist's deaths occur promptly and are counted against him, whereas the abstentionist's deaths are often late, as from fistula, and are not counted.

TABLE 2.—STATISTICS OF ABDOMINAL WOUNDS TREATED BY THE INTERVENTIONIST METHOD

Surgeons	No. of Cases	No. of Deaths
Abadie	15	9
Barbet and Bouvet ..	15	8
Bichat	21	10
Boulay	20	11
Bouvier and Caudrelier	33	18
Bouvier and Caudrelier	58	30
Cadenat	17	12
Chartier	1	0
Chavannaz	13	9
Chevassu	38	25
Cotte and Latarjet ..	9	5
Delay and Lucas Championnière ...	22	12
Delay and Lucas Championnière	55	30
Didier	10	6
Dupont and Kendirdjy	4	3
Duter and Halez....	1	0
Gatelier	11	6
Gosset	7	3
Hallopeau	4	2
Hourtoule and Barbier	10	4
Launay	1	0
Carried forward ..	365	203
Brought forward ...	365	203
Lorin	8	5
Mathieu	26	20
Mathieu	41	28
Meyer and Taylor...	50	17
Pascalis	3	0
Pellot	11	10
Petit	5	0
Picqué	15	9
Proust	101	64
Quénu	1	0
Rouhier	15	9
Rouvillois	74	54
Schwartz	9	5
Schwartz and Mocquot	46	30
Schwartz and Mocquot	60	41
Stern	34	20
Ttartois	11	6
Vignard	9	5
Villette	2	0
Veiss and Gross.....	4	4
Total	890	530

Proportion of mortality 59.5 per hundred.

In support of intervention, the Interallied Surgical Congress of last March expressed the view, which is the most authoritative available, that all intestinal wounds should be treated by laparotomy, with suture. Most surgeons reserve the suprapubic buttonhole drainage, which the French call the operation of Murphy, and which the Germans ascribe to Payr, for cases of simple penetration without perforation. Payr advised that in all penetrating abdominal wounds an incision be made promptly above the symphysis for drainage.

Chalier and Glénard treated fourteen of their thirty-nine cases of abdominal gunshot wounds with simple drainage of the pouch of Douglas with intraperitoneal injections of ether and oil of camphor. They also injected oil of camphor subcutaneously and employed the Fowler position. There were ten deaths among the fourteen patients. None of the patients were operated on within ten hours after injury and some were operated on as late as the fourth day.

TABLE 3—RESULTS OF SUPRAPUBIC DRAINAGE IN FIFTY-FIVE CASES

Bouvier and Caudrelier:
16 operated on in less than 3 hours, 8 deaths, 8 cures.
11 operated on in less than 5 hours, 5 deaths, 6 cures.
2 operated on in less than 6 hours, 2 deaths, 0 cures.
Lapointe:
14 operated on in the first 7 hours, 8 deaths, 6 cures
12 operated on after the first 7 hours, 12 deaths, 0 cures.

Table 3 shows the results of simple suprapubic drainage in fifty-five cases.[2]

What may be called the internationally accepted treatment of patients not to be operated on consists in rest in the recumbent position with shoulders raised and knees flexed. This position relaxes the abdominal musculature and adds to the comfort of the patient. No attempt should be made to move the patient unless the move is unavoidable, nor should he be permitted to move himself. If he is moved before the operation, the Fowler position should be maintained during transport. Food by the mouth should be interdicted and water likewise should be forbidden, unless neither nausea nor gas is present. A teaspoonful of water at intervals of fifteen minutes may be given by mouth to moisten the dry mucosa. Food and water may be given by the bowel in the case of lesions of the small intestine or the stomach, the common sites of perforation. Opium should be given to control pain whether the operation is to be done or not. Shock is to be combated by heat, and by physiologic sodium chlorid solution administered hypodermically, by rectum and by intravenous infusion.

MORE COMMON INJURIES OF THE VARIOUS INTRA-ABDOMINAL ORGANS

Gunshot injuries of the stomach are of frequent incidence. Perforation of the stomach when it is full is more serious because of the escape of the contents, than when the organ is empty, notwithstanding that the openings made by the missile are smaller, all things being equal, when the stomach is distended (Landois). The commonest injury is that in which the aperture of the entrance is on the anterior wall and the wound of exit on the posterior wall. This, of course, may be reversed. Both openings may be on the anterior wall, or on the posterior wall. In the latter case, the stomach contents will empty into the lessser peritoneal cavity.

Landois has called attention to a frequently occurring phenomenon, namely, the outpouring of stomach contents into the lesser peritoneal cavity through a wound of exit in the posterior wall, while the wound of entrance on the anterior wall discharges no contents at all.

Little value attaches to the symptoms of hematemesis in stomach wounds as it is rarely present. Wounds of the anterior stomach wall are, as a rule, easily found and readily closed. The wound on the posterior wall is not always easy to find nor is it easy to close by suture. Through a large opening in the gastrocolic omentum, the lesser peritoneal cavity may be mopped free of blood and the stomach contents and the posterior wall inspected. Occasionally one can find the posterior wound with the finger but cannot bring it into view for closure by suture. In such a case, drainage without suture is safer than blind and awkward attempts to repair the wound. An experienced surgeon, however, will not often be driven to forego the suture of any stomach wound.

Pauchet has advised approaching the posterior stomach wall through an opening made by separating the greater omentum from the transverse colon along the line of the insertion of the omentum to the intestine. I have found that this method provides excellent exposure. It is very easily carried out.

Of all the hollow viscera, the small intestine is the most frequently perforated. Horizontal close range shots with the wound of entrance near the umbilicus produce most perforations. There may be wounds of entrance and exit in each wounded coil of intestine or a single opening may be present, the result of a tangential shot. As a rule, the openings are present in pairs, the wound of exit being the larger and accompanied by more marked extrusion of mucosa. Irregularly deformed nickel or steel-jacketed bullets or grenade fragments may entirely divide the small intestine. Of great practical importance are the wounds establishing communication from the intestine lumen to the space between the peritoneal laminae of the mesentery produced by tangential shots of the small intestine at its mesenteric attachment. These may be overlooked.

A few hours after perforation of the small intestine, the neighboring peritoneal surfaces become covered with plastic exudate, which in the case of small wounds, for example, those from minute grenade fragments may effectually prevent further escape of intestinal contents and occasionally lead to spontaneous cure. The benign, walled-off abscess is unfortunately a much less common sequel of perforation than is general peritonitis.

The comparatively hopeful outcome of injury of the large intestine has been ascribed to the fact that the walls of the large intestine are thicker and the wound is partially closed by the greater amount of tissue involved in the perforation. An interesting point is that wounds of the small intestine higher up are more likely to be associated with injuries of other vital organs than are wounds of the large intestine. Many surgeons of the present war support the view of Landois that if we eliminate from consideration associated lesions of other organs, infection from injury with escape of contents of the large intestine is more serious than that following injury of the small intestine. The contents of the cecum and ascending colon are rich in bacterial flora of virulent character, so that comparatively few patients with perforation of the colon survive even when promptly operated on. A smooth rifle ball or a small grenade fragment may produce a small wound of the colon which more or less perfectly closes itself by contraction of the muscularis and the sliding of the intestinal coats. In such a case, the escape of contents being slight or nil, the chance of recovery is good if the operation is performed promptly.

Retroperitoneal wounds of the colon are often overlooked, especially in fat individuals. The presence of intraperitoneal hematoma and gray or brown-gray discoloration of the peritoneum with edema or gangrene in the neighborhood of the wound are valuable signs, though not always present. Retroperitoneal wounds of the transverse colon may elude search until the lesser peritoneal cavity is opened.

Extraperitoneal injuries of the rectum nearly always recover though the convalescence may be prolonged because of the development of fistula, cellulitis or septicemia. On the other hand, all injuries of the rectum which establish communication with the peritoneal cavity are to be regarded as serious.

Wounds of the kidney are, as a rule, accompanied by injuries of the intestines. If there is no evidence of perforation of the intestine, the kidney injury should be treated conservatively. Even in cases of extensive hemorrhage from a kidney wound, the treatment may well be conservative unless the case can be brought to operation very early and the hemorrhage is really threatening. Uncomplicated injuries often heal promptly. If the renal vessels are divided or great destruction of the kidney has occurred nephrectomy is required. As a rule, however, it may be stated that rifle bullet wounds of the kidney are best treated by rest and opium. Occasionally, gunshot injuries of the kidney are followed by hydronephrosis requiring incision and drainage.

Wounds of the bladder rarely produce dangerous hemorrhage. The bladder contents are normally not infectious, but if emptied into the peritoneal cavity, cause more or less chemical irritation. Obviously, extraperitoneal wounds of the bladder are less serious than those which involve the peritoneal cavity. Hemorrhage into the bladder suggests an extraperitoneal injury of the bladder. An empty bladder suggests intraperitoneal injury of the bladder with escape of urine into the peritoneal cavity. The interallied conference declared for primary suture of intraperitoneal bladder wounds and for suture of extraperitoneal wounds as well. Inaccessible wounds are to be enlarged and drained. Cystostomy should be done in bladder wounds with urinary infiltration.

Intraperitoneal wounds of the bladder demand abdominal operation if conditions are favorable. If not, a retention catheter should be introduced promptly. Extraperitoneal wounds are best treated by continuous catheterization or by perineal section.

A clean-cut wound of the liver is rare. Lacerations are the rule. The wound of entrance is small, the wound of exit larger, and the bullet canal fusiform. Star shaped wounds are not rare. Hemorrhage is always present, the degree depending on the size of the vessels involved. Fortunately, the liver tends to tear and give way between the large vessels. Near the hilus, however, the danger of injury to large vessels is great. Liver hemorrhage often subsides spontaneously. Blood pressure is low and the bleeding may be controlled nearly always by pressure with gauze pads. In wounds of the liver communicating with the chest, hemorrhage is into the chest cavity, rather than into the abdomen, since intra-abdominal pressure is greater than intrathoracic pressure. If there be extensive laceration of the diaphragm, the liver tissue may be extruded into the chest.

Uncomplicated gunshot wounds of the liver require no surgical treatment unless there is serious hemorrhage. This hemorrhage may be controlled in nearly all cases by gauze packing, which is left protruding at the abdominal wound.

Combined injuries of the chest and the abdomen are not uncommon. Landois divided these into five groups as follows:

1. Abdominal injuries associated with perforation of the diaphragm and pleural space. Since the pleural space extends considerably farther down laterally and posteriorly than the upper level of the abdomen, horizontal shots may, of course, perforate both cavities. In such a case, stomach or intestinal contents, bile or peritonitic exudate may enter the pleural space causing pleuritis.
2. Associated injury of thoracic and abdominal organs. In a complicated injury of the lung and liver the patient may cough up bile, or as in one case observed by the author, may cough up a bullet entering the lung by way of the abdomen and the diaphragm. Empyema may occur as the result of such a complication. The heart may also be injured by bullets passing through the abdomen.
3. Wounds with great laceration of the diaphragm. In such a case, the liver or other abdominal organs may be extruded upward into the chest.
4. Tangential shots of the lower thorax with contusion of the liver or kidney.
5. Separate or multiple injuries of the chest and abdomen.

ABSTRACT OF DISCUSSION

Dr. Daniel N. Eisendrath, Chicago: The principles underlying the treatment of gunshot and stab wounds of the abdomen are essentially the same whether the work is in civil or military life. Dr. Eastman spoke of the combined thoracic and abdominal injuries. These are of a special class in which in civil practice the perforation of the diaphragm and injury of abdominal viscera are frequently overlooked because the men do not think of anatomic relations, that the diaphragm has under it a large proportion of the male abdominal viscera. For that reason we are accustomed to look carefully within the first six to twelve hours, examining the patient with perforating stab or gunshot wound of the chest almost every hour for evidence of abdominal injury. Especially in the last two years of the war there have been a relatively large proportion of injuries of the thorax, which have gone under the name of the open, or leaking pneumothorax. In these cases there is extensive laceration and destruction of the chest wall with injury to the diaphragm, to which Dr. Eastman has referred, and extensive laceration of the liver. Since the Battle of the Somme there has been more tendency to treat these injuries by early exploration. This can easily be done by reopening the edges of the thorax wound to see whether there has been perforation of the diaphragm or injury of the subdiaphragmatic structures. Dr. Eastman spoke of the signs of perforation. These are not different in war from those seen in civil practice, and it is the consensus of opinion among those of experience that when these are present, under no circumstances should a chance be taken, but that laparotomy or exploration of the wound be done at once. Rather should this be done many times without finding an intraperitoneal perforation than that a perforation be overlooked. Of these signs rigidity of the abdominal muscles is one of the most important in indicating beginning peritonitis. If that rigidity spreads within two or three hours, or has at the time of first seeing the patient spread over one quarter or half of the abdomen, take no chances, but do a laparotomy at once. Accompanying tenderness is also a very valuable sign of beginning peritonitis. A third sign is increase in the pulse rate. Leukocytosis is also a guide, because this may be present after effusion of blood into the peritoneal cavity, as it is in cases of infection. You do no damage by operating in a case presenting these signs. If the wound has not perforated the abdominal wall you have done no harm. If there has been perforation of the abdominal wall you are in a position to deal with the injury. The first surgeon to suggest the value of suprapubic drainage was Dr. Van Buren Knott of Sioux City, Iowa. Many recoveries from generalized peritonitis in the last five years have been attributed to suprapubic drainage. With a generalized peritonitis you might as well pass your hand over a patient as to expect suprapubic drainage alone to effect a cure. Unless there is repair of the injury in the early stages such drainage is an irrational measure. I do not think any of us will fail to remember the clinical picture of perforation of the upper portion of the alimentary canal or pancreas with the hypertoxicity which comes from the activated pancreatic secretion. A method I have found of value in examining for perforation is that of placing a loose catgut suture about the coil of intestine at the point of beginning examination. If you find no perforation in the small intestine, begin at the catgut suture and examine the large bowel in the same way. The suture thus marks the beginning and the ending of the examinations.

Dr. John Young Brown, St. Louis: For quite a number of years I have been an earnest advocate of early operations in the treatment of gunshot wounds of the abdomen. There are some points relative to diagnosis to which I should like to call attention. The simple penetrating wound is a wound that penetrates the peritoneal cavity and does not injure the solid or hollow viscera. The penetrating and perforating wound may be subdivided under two heads: 1. The penetrating and perforating wound, where the bullet injures only the bloodless portion of the gut. 2. The penetrating and perforating wound, where the bullet perforates the intestine and mesentery. This last type of wound is readily diagnosed, as it gives immediate symptoms—the symptoms resulting from hemorrhage. The other two types cannot be diagnosed without exploratory operation. I have seen many cases with multiple bowel perforations, perforations occurring in the bloodless portion of the bowel, which presents absolutely no symptoms suggestive of the seriousness of the injury. Again, I have operated in a large number of cases where examination of the wound of entrance would indicate perforation, and, after exhaustive search, I failed to find any injury. Early exploration should be the rule in all cases. Cases that give no immediate symptoms may have multiple perforations, and the failure to repair them will result in fatal peritonitis. In regard to the combined wounds involving the chest and abdomen, all such cases should be explored. We no longer hesitate to open the chest. A stab or bullet wound penetrating the chest brings on a pneumothorax, and resection of a rib in order to see if the diaphragm is injured can be done with perfect safety. If the diaphragm is penetrated, the same rule should hold good relative to abdominal section. I seriously question the cases that have been reported as having recovered from multiple perforations without operation. I am inclined to believe that the diagnosis was incorrect.

HEMORRHAGIC DEGENERATION OF MYOMAS AND THEIR RELATION TO SARCOMAS *

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By hemorrhagic degeneration of myomas is meant that condition in which spontaneous hemorrhage takes place into the substance of a myoma that has previously undergone a degeneration. Gebhard sought to indicate the essential degenerative character of the lesion by calling it a necrobiosis. The changes which underlie the condition consist of an obliterating endarteritis, hyaloid degeneration of the vessel wall and degeneration of the surrounding tumor tissue, with finally a free hemorrhage into the interstices of the degenerated tumor. The end-result of hemorrhagic myomas may be one of several: 1. The hemorrhage may become absorbed from the substance of the tumor, leaving only cholesterin crystals or small cysts. 2. More commonly the escaped blood lies for indefinite periods in a fluid state (Fig. 1), but the blood may clot, leading to vascularization and organization of the blood clot. 3. The hemorrhage may result in perforation of the capsule of uterine tissue covering the necrobiotic mass (Fig. 3). The escape of blood from such a perforation may cause profound irritation of the peritoneum, or even death from shock. 4. Finally, a rapidly developing sarcoma may develop from the hemorrhagic tissue. It is the last named condition that concerns us here.

It is necessary in seeking the relationship between these hemorrhagic myomas and sarcomas to examine the conditions that precede the hemorrhage and to study the changes that take place in the mass after hemorrhage has occurred.

Cullen long ago pointed out that most myomas show some evidence of hyaloid degeneration. In most tumors the microscope is required to discover it. These areas of degeneration when more extensive may involve the tumor tissue diffusely, or only that portion most remote from the vessels, while that lying nearest the vessels remains undegenerated or even shows evidence of recent proliferation. On the other hand, the tissue lying next to the vessel wall may be the part showing the chief degeneration (Fig. 5). This seems to be the type in which hemorrhage is most apt to occur. Associated with the hyaloid changes there is always a thickening of the vessel walls and usually a narrowing (Fig. 6), or even an obliteration of the lumen of the vessel (Fig. 7). Surrounding these vessels more or less extensive hyaloid or mucoid material is found. These areas may liquefy and form cysts. This is the most common degenerative change observed at the operating table. It is tumors showing such changes that are prone to bleed into their substance. What factors enter which excite a hemorrhage within such tissue cannot be stated. It is probably due to a progressive decrease in the resistance of the vessel walls until they are weakened to such a degree that they are no longer able to withstand the intravascular pressure. Accidents to the common source, however, must sometimes play a rôle, for in some tumors multiple foci of hemorrhage are seen.

Once blood has escaped, a series of phenomena are observed. In some tumors the blood remains fluid for long periods of time. The history may indicate that hemorrhage took place months before operation, yet these tumors are fluctuating, and, when cut into, much blood escapes. This fluid blood may be contained in compartments of varying sizes, or may infiltrate the tumor diffusely. This blood may or may not undergo spontaneous coagulation within the tumor or when exposed to the air. In most instances a part coagulates before the tumor is opened and part remains fluid. Usually bands of fibrin that have undergone some development form a network across the small pools of blood. Within this meshwork, red blood cells lie which have not undergone degenerative changes (Fig. 8). In some instances this tissue proceeds to a complete development of fibrous tissue, and a typical angioma results. Sometimes, on the other hand, the fibrin bundles remain as such, showing no tendency to go on to the development of fully formed fibrous tissue. It is in these specimens, usually those in which the hemorrhage occurred some time previous to operation, that the most interesting changes take place. In fresh hemorrhages, nucleated cells are observed that can be identified as leukocytes. These cells arrange themselves along the fibrin bundles noted above. In older specimens these cells are larger, the nuclei are ovoid, and the protoplasm is more abundant. In other words, they may be called endothelioid. The way these cells arrange themselves along the fibrin bundles seems identical with that observed in tissue cultures. I have often observed similar phenomena in the study of the healing of freshly made wounds. In some specimens a part of the tumor may represent tissue in this stage (Fig. 9), and another portion may show more positive evidence of sarcoma. Finally the patient may attest to the character of the tumor by dying of a rapidly recurrent sarcoma. The question of fundamental importance is the source of the nucleated cells from which the sarcoma develops. They seem to come from the blood stream, because in recent hemorrhages they are mingled in the proportions in which one would expect to find leukocytes. More convincing to me is the fact that in the healing of peritoneal wounds the cells seem to be native to the blood stream.[1]

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* Owing to lack of space this article has been abbreviated for publication in THE JOURNAL by the omission of the illustrations. The complete article appears in the Transactions of the section and in the author's reprints.

[1] A more detailed consideration will be found in Hertzler, A. E.: The Peritoneum, St. Louis, C. V. Mosby Company, 1918, 1.

Should it prove to be true that these cells, which are found along the fibrin bundles, are derived from the blood stream, one would be warranted in designating such sarcomas as hematogenic. These would then be placed in contrast with the more common type resulting from metaplasia of the myoma cells, which may therefore be called myogenic.

The hypothesis set forth above finds support in the genesis of sarcomas of other regions. Sometimes in tumors developing in fascias after a single blow, similar pictures are observed. The same thing is true of processes in the intestine wall which begin as inflammations and end up as sarcomas. Closely related are reactive processes which do not end in malignant tumors such as desmoids and woody phlegmons. The first group is exemplified by those tumors which arise following injuries to bone or fascial plains, and the other by sarcomas following inflammations of the intestine wall. The latter type so closely resembles indurative inflammations that a distinction is impossible.

The disposition of the hemorrhagic myomas to form sarcomas finds a practical application in the fact that they are always objects of suspicion. Whenever any of the evidence of hemorrhage or the changes which precede it are present, the prognosis must be made with a certain reserve.

ABSTRACT OF DISCUSSION

Dr. Emil Novak, Baltimore: The work of Dr. Hertzler is very interesting, but he has not given sufficient evidence that these cells surrounding the blood vessels actually become converted into sarcoma cells, as he believes. We ought to be very conservative in our interpretation of these findings. Very few myomas do not show hemorrhages. In these cases of hemorrhage with blood thrown out into the tissues we always get what might be called a foreign body reaction. Sometimes we even get giant cells. I recently saw a case of large ovarian cyst with what seemed at first sight to be giant cell sarcoma in the walls of the cyst. Closer examination showed these to be simply a reaction to an old hemorrhage. If Dr. Hertzler can show other pictures proving the transition of these cells into actual sarcoma cells we can accept his theory. Otherwise, I feel that it is without proof. It is curious to expect hemorrhage in myoma to predispose very strongly to sarcoma when it does not do so in other parts of the body. This suggestion looks rather unlikely, especially when we find hemorrhage in practically all myomas of the uterus. Every myoma of the uterus ought to be cut open before it leaves the operating room. Unfortunately, there is little clinical evidence to indicate sarcomatosis, the process taking place in only one nodule. It is a great mistake not to cut into all nodules; the one overlooked may be the one becoming sarcomatous. One reason for the unfortunate outcome in sarcomas of this group is that supravaginal hysterectomy is done. Dr. Cullen some time ago reported a case in which supravaginal hysterectomy had been done two years before and in which at the time of report the patient had suddenly gone into collapse with symptoms of intraperitoneal hemorrhage. A large mass had arisen from the stump at the site of the old operation. The old specimen was looked up in the laboratory, where it had been examined two years before, and in one of the nodules the typical sarcoma was found, having been overlooked at the time of operation. Kelly and Cullen collected 2,300 cases of myoma and a little over 1 per cent. (twenty-five) were sarcomatous.

Dr. Bertha Van Hoosen, Chicago: I may not be able to add any weight to Dr. Hertzler's paper, but I hope I will not detract from its value if I demonstrate a reverse process, i. e., malignant disease converted into fibrous tissue. A patient, who had inoperable adenocarcinoma of the cervix and who was suffering from hemorrhage, profuse and bad smelling discharge, much pain and general debility, was given 9 grains of emetin intravenously with no reaction, and at the end of two weeks the hemorrhage and discharge had entirely ceased and she was able to be up and do light work. A second dose of 9 grains was followed by a severe reaction and sudden death. No pathology was found to account for the patient's death, and a section taken from the part most involved by the carcinoma shows in the superficial portions an extensive fibrosis surrounding small groups of carcinoma cells; the deeper parts of the section show no evidence of malignancy.

Dr. Arthur E. Hertzler, Kansas City: I have tried to make it clear that in order to get the facts of this argument one would have to review a considerable number of cases, observing the various steps in their development. In the myomas I see there is hemorrhage in only a small proportion of the cases. This may be explained by the fact that I never use the retractor, and have no traumatism, except that done by the operator's hands. Fully 90 per cent. of the tumors we have had do not have blood in the substance of the tissues. The percentage of sarcoma in the tumors I see is just about four times that in Dr. Novak's experience. In order to get the run of the general argument one must familiarize himself with the structure of cultures in vitro, the appearance of the cells and the fibrin bundles as they develop. He must also familiarize himself with the development of fibrous tissue along the lines of recent development.

PAROTITIS FOLLOWING INDUCED ABORTION IN A CASE OF PERNICIOUS VOMITING IN PREGNANCY *

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DETROIT

REPORT OF CASE

Some time ago I was called into the country by Dr. Sharpe, in consultation, to see Mrs. X., a primipara, aged 23, who was then in her thirteenth week of pregnancy. Vomiting had begun on the eightieth day following the beginning of her last menstruation, and had become progressively worse until, at this time, it had reached the pernicious stage. The patient was much reduced and exhausted, but looked fairly well, and it was arranged that, should the remedies then suggested prove inadequate, interruption of the pregnancy must be undertaken without delay.

Three days later, I dilated and emptied the uterus, placing a strip of iodoform gauze in the cavity and packing the vagina lightly with the same material. The following day the patient became nervous and disturbed, and these symptoms continued during the greater part of her illness, the delirium at times becoming boisterous and agitated.

Three days after the curettage, she complained of pain in the left parotid gland, which was swollen and inflamed. Forty-eight hours later, a large quantity of thick yellow pus was discharged from the mouth. On the following day a fluctuating mass in front of the ear was opened under chloroform by the attending physician, and during the next twenty days four other abscesses or pockets, one of which was retropharyngeal, were incised and drained. On the fifth day after operation, headache developed. On the tenth day there was severe pain at the base of the skull, and on the nineteenth day there was a constant backward movement of the head, indicating a probable involvement of the meninges or encephalon. Muscular twitching and repeated up and down movements of the hands and feet occurred at intervals during the entire period of the disorder. Vomiting continued until the twelfth day following operation, when it ceased. No pelvic symptoms were noted until the nineteenth day, when urination began to give rise to great distress. On the twenty-first day the emptying of the bladder was, on one occasion, preceded by a slight convulsion. During the greater part of the time urine was passed freely, frequently involuntarily, but at

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times it became scanty and of a dark brown color, and deposited a large amount of sediment. There is no record that urinalysis had been made. Involuntary movement of the bowels was of frequent occurrence.

On the fourteenth day, a cough developed, sometimes accompanied by the raising of quantities of pus which the patient had evidently swallowed. On the eighteenth day, she complained of pain in the right lung, which was aggravated by coughing. During the whole course of the disease, free discharge of pus continued from the wounds and mouth, and later from the nose, and on the thirtieth day both eyes became filled with purulent material.

On account of the condition of the stomach during the early days of the sickness, the patient could retain no nourishment. Later the swelling of the neck glands and stiffening of the jaws prevented opening of the mouth, and forty-eight hours were sometimes passed without food of any kind. Nutrient enemas were begun early and tried repeatedly, but were generally expelled; at times the anus and rectum were so relaxed that the fluid escaped as soon as introduced. During the last day of life, tube feeding was resorted to. Saline by hypodermoclysis at times appeared to give temporary relief.

After thirty-three days of intense suffering, which toward the end was relieved only by hypodermics of morphin, the patient finally succumbed to the infection. During the entire illness the temperature went up only once as high as 103, generally fluctuating between normal and 101. The pulse was erratic, but never went above 140, usually running to about 100 or below.

This case was obviously one of profound septic infection. The source of the trouble is not, however, as readily determined. The case is unique of its kind; I find no other similar instance recorded.

RELATION OF PAROTID TO SYSTEMIC DISORDERS

In pagan times, when men ran up against a problem which they could not solve, it was carefully shouldered off as the work of demons. As late as the early nineteenth century, Christianity made the inexplicable a throwback on Providence, and later still the term "sympathetic" stood for the unknown, and "reflex phenomena" served as a cloak to ignorance of internal physiologic and pathologic processes.

The relationship between the parotid gland and systemic and local disorders has not, up to the present time, been satisfactorily elucidated. That symptomatic parotitis sometimes occurs as a grave complication in the course of infectious fevers has long been known, and that it is also an occasional sequela of other disorders, as amebiasis (Lesk), peripheral neuritis (Gowers), and the like, has been fairly demonstrated. In 1886 Paget directed particular attention to the fact that parotid bubo might develop as a rare secondary manifestation, following injuries to and operations on the abdominal and pelvic viscera, and he collected 101 cases from his own experience and the literature. In 1902 Morley added fifty-one cases to the list, and since that year a considerable number of instances have been reported in the medical press of this and other countries. Moreover, it has been found that symptomatic parotitis may follow other operations, though more rarely than those directed to the abdominal contents. Thus, MacDonald has seen cases of inflammation of the gland associated with railway amputations of the thigh, and Auld mentions an instance which followed trachelorrhaphy and the removal of hemorrhoids. Altogether there are now on record the reports and histories of several hundred cases of the condition, from which we may draw conclusions.

In specific parotitis, or mumps, the existence of a distinct connection between the disorder and the testes in the male and the pelvic organs and breasts in the female, especially during the child-bearing act, has been satisfactorily established, and Lavaran has shown that, in this form of the disease, the materies morbi is a specific organism, a small gram-negative diplococcus, which is presumably carried to the distant organ from the seat of the original focus. That the organism may be effective in its colonized environment in otherwise healthy males and females is sufficiently proved by many case reports. As long ago as 1855, in its obstetric connection, Homans mentions a case of mumps in a pregnant woman which extended to the uterus and led to premature delivery, and more recently similar cases have been recorded by Rook, Salter and others.

On the other hand, parotitis following septic (?) abortion and puerperal infection has received attention from a number of observers. Beuttner saw two cases of pyemia following abortion, in one of which metastasis to the parotid and the buttocks occurred; and in puerperal infection similar instances are recorded by Charriers, Davis and others. In both Davis' cases, abscess of the parotid complicated puerperal septicemia, from which both patients appeared very ill. Both patients also had pneumonia, and one died.

Now, if a path, as yet unrecognized, exists correlating the parotid gland with abdominal and other organs and parts, it is quite logical to assume that the arrangement is a two-way function, a premise which, admitted, at once makes clear why invasion of the gland by pathogenic organisms takes place after surgical procedures and in local pelvic infections.

The bacterial organisms found in most of the reported cases is the *Staphylococcus pyogenes-aureus.* In Davis' cases, which appeared to be of streptococcic nature, no bacteria were found in the blood or lochia, but the parotid pus contained staphylococci. Legueu and Morel have, on the other hand, found the *Staphylococcus aureus* in the blood associated with infection of the field of operation, and believe that this organism is the cause of the parotid disease.

According to Henning (quoted by Hoffstatter), the course of puerperal parotitis may run afebrile, but usually the temperature corresponds to the severity of the infection.

TWO SOURCES OF GLAND INVOLVEMENT

From an analysis of reported case of postsurgical and obstetric parotitis it is apparent that the etiology of the gland involvement must be sought in two sources: first in a general, and second in a local, infection. In the first, the process is embolic (metastatic), that is, it conveys the germs of toxins to the parotid gland from the involved organ or part.

One point in this connection, which is possibly of considerable importance, and which thus far seems to have been overlooked by most writers, is that the parotid alone of the three salivaries contains lymphatic glands. The slowing or stasis of the blood or lymph stream at these points would give rise to an accumulation of the causative agent in sufficient quantities to overcome the resistance of the gland and bring about the inflammatory sequel.

The second source of infection is through Stenson's duct. From a study of the involvement of the parotid gland in other conditions, it is evident that the oral cavity plays a more important rôle in the production of parotid bubo than is generally believed. The mouth contains a large and varied flora, which under ordinary circumstances is harmless; but some bacteria, after operations, may become virulent. The drying effect due to the anesthetic, and possibly due also to nervous influence in lessening secretion, the blood loss, the removal of water from the patient's body, due to limited intake of fluids and vomiting and possibly to mechanical insult, and the result of swabbing the mouth for the removal of mucus and vomitus all render the functionally disturbed gland increasingly susceptible to the invasion of the bacteria which, finding a suitable nidus in the abnormal tissues, at once develop a greater or less activity.

In the case I report, according to the nurse in charge, the mouth of the patient was foul from the beginning and the teeth were covered with sordes, before the emptying of the uterus was undertaken, and as the operation was conducted as aseptically as possible and no pelvic symptoms developed before the nineteenth day, when general infection was well established, I am of the opinion that involvement of the parotid gland in this instance was of oral, rather than of pelvic, origin.

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ABSTRACT OF DISCUSSION

Dr. E. E. Montgomery, Philadelphia: I have seen parotid infection follow various operative procedures and septic processes. In the great majority of cases, however, I was inclined to believe that the condition arose from transmission through the mouth rather than through the blood. The association of mumps with the development of orchitis and ovaritis has led to the belief that there is a very close relationship between these organs and the parotid gland, but all that can be said, I think, is that they were possibly more susceptible to the organisms which produced the glandular inflammation than other structures of the body.

Dr. M. E. Klingler, Garrett, Ind.: I recall a case of lobar pneumonia in the right lung in which the patient, 32 years of age, aborted an early pregnency on the fourth day. This was followed on the next day by left-sided parotitis without formation of pus. On about the twentieth day there was a right-sided hepatitis, also without pus. Finally, on the thirty-fifth day an appendiceal abscess developed, which was opened and drained and the appendix removed. Subsequently there was a left-sided empyema on about the fiftieth day, followed by complete recovery.

Dr. Stephen E. Tracy, Philadelphia: I have seen two or three cases of parotitis follow operation, but they all cleared up promptly. I am inclined to believe with Dr. Montgomery that in some of these cases the infection originates in the mouth. For that reason more attention should be paid to the condition of the mouths of our patients than has been done in the past. The profession is beginning to give this subject more consideration. It is well to bear in mind that a patient with soreness at the angle of the jaw may have a more serious condition than an infection of the parotid gland. A year and a half ago I operated on a patient who eight or ten days later complained of soreness at the angle of the jaw. I thought at the time that she was developing a parotitis. In thirty-six hours it was evident she had tetanus. It is well to keep this in mind, as such a condition requires prompt and energetic treatment.

Dr. W. P. Manton, Detroit: The condition which I reported following the emptying of the uterus is rare; at least, I have been unable to find any record of such a case in literature. Even up to the present time surgeons are claiming that these cases of infection of the parotid are sympathetic. I am not a believer in "sympathy" of that kind. That the infection may take place through the mouth is a well settled fact.

CLINICAL SUPERVISION OF THE WELL BABY DURING THE FIRST YEAR*

H. H. YERINGTON, M.D.
SAN FRANCISCO

With the enormous amount of work going on in Europe at this time, the need of more organized work in the conservation of child life is beginning to be felt in this country. This work has its foundation, for the most part, in our large public clinics, and the ones doing the greatest work are those having the proper organization for handling it.

Those of us who have spent many years in clinic and hospital work and are connected with teaching institutions have often felt that constructive work in the ordinary clinic is lacking, that great numbers of our patients go home with improper treatment and that the work on the part of the clinicians becomes monotonous.

It has seemed to me that the factors in making a children's clinic a success are the following: (1) a supervising head who is present at all times during clinic hours, capable of attending to the executive work, and directing the teaching; (2) individual care of the various patients by the same clinician; (3) the division of the clinic into different parts, each part headed by a clinician interested in a certain line of work, and a specialist in it; (4) the proper teaching of students, nurses and also mothers; (5) a close connection between the prenatal clinic and children's and obstetric services in the hospital; (6) the social service worker, who is indispensable in such an organization; also the convalescent home, which should be a part of the clinic.

DEVELOPMENT OF SPECIAL CLINICS

The plan of special clinics in the children's department of the Stanford University Medical School was developed several years ago under the direction of Dr. Langley Porter, the first being a special clinic in congenital syphilis starting in 1911. Since then the following have been established, each under a separate head: mental deficiency, prenatal, adolescence, children's chest clinic, well baby clinic, whooping cough, and a special division in the baby clinic for the instruction of mothers and students in dietetics.

The big advantage in developing clinics is that the patient gets much better care, the work of the student is more concentrated, and the clinician takes pride in developing his own side of the work and obtains valuable material for scientific research. As this paper deals with the supervision of the well baby during the first year, I shall consider only that part of the organization dealing with this subject.

In 1907 the mortality of the infants up to 2 years old in the San Francisco Foundling Home was 59.7 per cent. The next year the Associated Charities put their foundling babies in private homes, the food was ordinary commercial milk, and there was no special supervision. The mortality dropped to 12.5 per cent. These figures would seem to settle the case for the foster home. In 1909 the baby hygiene committee of the Collegiate Alumnae began to cooperate with the

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* From the Division of Pediatrics, Leland Stanford Junior University School of Medicine.

* Read before the Section on Diseases of Children at the Sixty-Ninth Annual Session of the American Medical Association, Chicago, June, 1918.

Associated Charities. They made possible the use of certified milk and physicians rendered clinical and medical care.

From 1909, the mortality of the boarded-out infants continued to drop until in 1916 it was 2.67 per cent. in contrast with 8.7 per cent., the average death rate of babies of the same age in the city of San Francisco.

THE CLINIC AT WORK

The present system of the Associated Charities' work operates as follows: First, a home is carefully selected and the baby is placed in it. Second, the social worker and nurse watch the home and baby, certified milk is supplied, and the mother is taught how to modify the milk. Third, the baby is brought to the clinic every Friday and its feeding and care supervised by Drs. Holsclaw and Rude who deserve the credit for the remarkable work done by this organization. During 1917, 245 babies were cared for, of whom nine have died, the mortality being 3.67 per cent.

The problem of caring for infants in a general clinic is somewhat different and more complicated. The principal difficulty is in the fact that it is much harder to get the mother to cooperate than the foster mother, and the supervision over the babies is not as close. Feeling, therefore, that there was a big field in the education and care of the mother and child coming to our general clinic, we decided to establish a well baby clinic one day a week for these cases. Such a clinic was established a year ago last September and has been growing rapidly since.

In order to do any constructive work in a clinic of this nature a close association of the prenatal and adolescent work is indispensable. The adolescent clinic has been established two years, and is on a firm foundation, and a survey of its first hundred cases was made and published recently by Dr. Amelia Gates.[1] A movement has been started to teach adolescent girls infant hygiene and formula making by combining the two clinics together one day a week.

This year the prenatal clinic under the department of gynecology and obstetrics had a total of 942 visits, many of the mothers having already had the educational advantages of the baby clinic.

PROGRAM OF THE WELL BABY CLINIC

The plan adopted in the well baby clinic is as follows: The clinic is held every Friday morning in separate rooms fitted up for this purpose, with a reception room, weighing and examining room, and a large outer room with three desks for the clinicians. The histories are brought from the central history room, the baby is undressed and weighed and the weight reported by a volunteer worker. The social service worker supervises this work, discussing home conditions and needs of the parent, and the histories of the babies are then brought into the outer room to be observed by the physician.

The babies are brought for examination every week for the first three months, every two weeks from the third to the sixth month, and every month from six months to one year. They are transferred then to the general children's clinic. Every mother delivered in either the maternity ward in the hospital or in the outpatient obstetric service is given a card asking her to report with her child to the baby clinic when it is 3 weeks old. From May, 1917, to May, 1918, there were 2,146 visits to this clinic, 348 being new cases. Of 290 deliveries in the hospital 194, or 67.8 per cent., returned to the baby clinic. Of 126 deliveries on the outside service, fifty-three, or 42 per cent., returned. This shows a close bond between the hospital cases and the baby clinic.

In order to stimulate the work and keep a check on such a clinic, the social service worker, of course, plays the leading rôle. A card system is kept, postals are sent to those not attending the clinic, and if there are no responses the cases are followed up in the homes. At the present time, more than 200 calls a month are made by the social service workers connected with the children's clinic. In the organization of a clinic of this kind, intimate knowledge of the home surroundings of the infant is of great importance, and the sympathetic relationship between the social service nurse and the mother is imperative.

A STUDY IN INFANTS' WEIGHTS

It is somewhat early to tabulate data obtained in this clinic, but some of the following points may be of interest. Last year Faber and Murry began a study of weights of San Francisco infants. They took the weights of babies born in the maternity and outpatient obstetric services of Lane Hospital, and the babies coming into the clinic. If any child came for malnutrition or any chronic disease, his weight was discarded as abnormal, and twins and premature infants were excluded. There were 2,966 weights taken from 246 boys and 275 girls and thirty-four from infants whose sex was not recorded. The average weight at birth in this series was: males, 3,500 gm., and females, 3,311.7 gm., or an average of 3,432 gm. Holt gives an average of 3,345 gm., which is 87.3 gm. less than the foregoing.

They summarize the results as follows: The initial loss in weight is greater in San Francisco babies' averages by about 38 gm., and the return to the original weight occurs approximately the same time, that is, in ten days. At the end of the first month, the San Francisco babies are heavier than those recorded by Newman and Holt, but not as heavy by 77 gm. as those observed by Robertson of England.

By the end of the first year, however, this loss is made up and the San Francisco infant's weight is 329 gm. heavier than that of the baby of any other locality previously recorded. This gain over other infants is no doubt due to the evenness of the climate and the lack of any season unfavorable for growth. The breast-fed babies show this regularity in development particularly well. The maximum growth occurs in August and the two and three months following, and this agrees fairly well with the most careful similar records made by Bleyer.

INSTRUCTION IN INFANT FEEDING

In our method of feeding we have endeavored to instruct the mother to nurse her baby as long as possible, later adding bottle feedings, beginning with one a day when the child's weight becomes stationary or the mother's condition warrants it. Examination of the breast milk we have found of little value as compared to the clinical manifestation of a diminished milk supply. I have felt that formulas of the simplest kind should be used in such a clinic, both as a ground work for students and because of the simplicity in making up the formulas. Dilutions of certified milk and water are used first and barley water substituted for water at the beginning of the third or fourth month. Cane sugar and one of the maltose and dextrin products have been the carbohydrate of choice, it being found that this combination regulates the bowels and is well handled by the great majority of our infants. At the age of 6 or 7 months, the feedings are changed from a three to a four hour interval, and fruit juices, cereals and broths are added, and at the age of 1 year a generous diet is given. The class in this course is limited to four students and covers a period of three months. They follow their own cases under the eye of an instructor, and with an average of fifty cases a morning, the instruction is very intensive. Both the caloric and the percentage methods are used in this work.

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[1] Gates, Amelia: Arch. Pediat., 1918, 35, 236.

THE CONVALESCENT HOME

Last year the people of Palo Alto who are interested in the university subscribed a sum of $2,000 for the establishment of a convalescent home for the clinic children. It was open for three months during the summer and ninety children were cared for. This year a similar sum will be subscribed and we plan to accommodate about forty children a month for a period of three months. We cannot care for the infant of less than 1 year old as yet, but the home will be there for any building up the baby needs during the run-about period.

When I left San Francisco, the program of Children's Year had been launched, and the first week's work had proved more successful than any of us anticipated. In view of the fact that the Associated Charities, the University of California, and Leland Stanford Junior University all have well established baby clinics and that others are being organized, I feel that we in the Far West are laying the foundation for a big work in the reduction of infant mortality.

ABSTRACT OF DISCUSSION

Dr. C. F. Wahrer, Fort Madison, Iowa: In the past it would have seemed foolish, if not silly, to have a clinic for the well, but what seems foolish in one age becomes the rule of life for another. A long time ago it was suggested that when a woman was expected to be confined, she should put herself in touch with her family physician and report any abnormalities. When I began practice thirty-five years ago it was the rarest occurrence for a woman to want me to confine her until she was in the second stage of labor. Sometimes I would be called on a case, and I had not the faintest idea until I arrived there whether it was a broken leg or a baby. Luckily for the poor patient, this state of affairs is passing, except in the most remote districts. In most cases now we are able to get the patient to report some time before, with much better results for mother and babe. Whenever a babe is born we have in the near future a potential patient, and the physician who attends the mother during the birth of the child, especially in the outlying districts away from the medical centers, should have the constant care of that child. The mother should be taught to be on the watch for symptoms of approaching trouble and keep the physician informed, and in this way many serious results would be avoided. This is easy now, as the physician is usually in telephone connection with all his patients.

Dr. Louis H. Schwartz, New York: I have conducted a "well baby" clinic for about twelve years. During that time we have taken care of about 11,000 babies. We have active social histories of about 10,000 babies. I was much interested in Dr. Yerington's description of his clinic. Our prenatal work has been well organized only recently. We have tried to get our babies as soon as possible after birth. With better organization we will get them much earlier than we do. These 10,000 family histories have been gotten in ten years by the same social worker, who speaks four or five languages. These babies represented 5,000 families—20,000 pregnancies of all sorts—stillbirths, miscarriages, full-time births, etc. Eight per cent. were miscarriages; about 1.5 per cent. were stillbirths; infantile deaths were about 12 per cent. Children up to 8 years of age were counted. That is to say, of the 20,000 pregnancies, 5,000 were useless up to the age of 8 years—in other words, a 25 per cent. loss of life. If we view that as compared with the lower animals, I wonder how much preventable death that represents. Put it in another way: The miscarriage rate in these families was 80 per thousand; stillbirths, 10 per thousand. The infant death rate as compared with the viable pregnancies, so to speak, is 131. Child death rate up to 8 years, per thousand pregnancies of all kinds, is 161, and child death rate up to 8 years as compared with a thousand viable pregnancies, is 178. That is to say, 178 of every thousand viable children die before the age of 8 years. For our children we might say we have a death rate of 64 at this clinic instead of 126 that the entire family has. The same class of patients before they came to our clinic had a general death rate of 126 per thousand. Under our care, in the same city, in the same surroundings, they have now a death rate of only 64 per thousand.

THE PRINCIPLES OF TREATMENT IN MERCURIC CHLORID POISONING

WITH RESULTS OF TREATMENT *

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Within the past two years there has been much work done in the various phases of mercuric chlorid poisoning. Before then, most of the work reported was of a therapeutic nature; but recently, new and important laboratory data have been contributed. These new data have certainly put the modern therapeutic measures to the test, discrediting many and placing a few on a firm basis.

The anatomic pathology has been well established. Every organ of the body is affected, the liver and kidneys bearing the brunt of the injuries. From a cloudy swelling the changes continue to fatty degeneration and necrosis. When the poisoning is severe, hemorrhagic inflammation may supervene.

Schamberg, Kolmer and Raiziss,[1] in their studies of the comparative toxicity of the various preparations of mercury used for therapeutic purposes, have shown in a long series of dogs that every animal develops evidences of nephritis of varying degrees after injections of both the soluble and insoluble mercury salts. The nephritis produced is primarily tubular, with frequent accompanying glomerulonephritis (hemorrhagic) in the severer instances. The changes in the tubular epithelium they attribute to a direct toxic degeneration of the cells by the mercury, and not to an inflammatory reaction depending on the elimination of toxic substances.

Mercury has been obtained from the blood of dogs within ten minutes after its administration by mouth.[2] Burmeister and McNally have shown that the kidney

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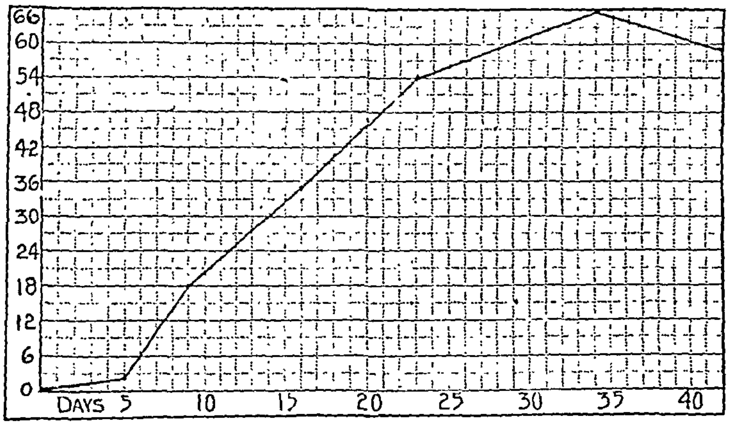
[1] Schamberg, J. F.; Kolmer, J. A., and Raiziss, G. M.: A Study of the Comparative Toxicity of the Various Preparations of Mercury, Jour. Cutan. Dis., 1915, **33**, 819-840.

[2] Burmeister, W. H., and McNally, W. D.: Mercury Poisoning, Jour. Med. Research, 1917, **36**, 87.

changes vary with the size of the dose in massive intoxication, and that the liver changes depend on the duration of the intoxication.

The important newer studies consider the question from a chemical standpoint. It is from this point of view that the present treatment must be evolved.

As the mercury is quickly taken up by the blood after ingestion, it is evident that all the tissues are quickly bathed with the toxic material. In a fatal case of mercury poisoning, it was found that almost one third of the mercury recoverable from the body was obtained from the blood.[3] In 1916, Lewis and Rivers[4] found that the retention of waste nitrogen was a factor in the production of early fatalities. More recently MacNider,[5] in an exhaustive study, has demonstrated some essential facts. Those animals that did not succumb from the early gastro-enteritis developed a severe type of acid intoxication, as evidenced by the production of acetone bodies, the reduction of the alkali reserve of the blood, and the increase in carbon dioxid content. Constantly associated with this acid intoxication was a kidney injury. He states that delayed kidney injury is not due to the action of the mercury as such during its elimination by this organ. He[6] had previously shown that acetone and diacetic acid are developed in nephritis produced by uranium, and that administration of alkaline carbonates lessened the toxicity of the uranium and delayed the formation of the acid bodies. Furthermore, when the kidney was protected by carbonate, it was found that the kidney remained functionally more active, and that there was a diminished acute swelling, fatty degeneration and necrosis of the renal epithelium.



Percentage of phenolsulphonephthalein output after a patient who developed anuria for three days began to void.

It is this work which has proved correct the therapeutic principles that I have employed in the treatment of mercuric chlorid poisoning.[7]

The symptoms of poisoning by mercury are well known: locally burns, and later vomiting and gastro-intestinal hemorrhages; as the toxemia progresses, oliguria, then anuria and finally "uremic" symptoms, as convulsions and death.

Many remedies, empiric and allegedly scientific, have been advocated in the use of mercury poisoning, but they seem not to have stood the test of time. We have used the alkaline treatment for more than three years, and our records show a lower mortality than that ordinarily reported.

The principle involved in the use of alkali is that of trying to counteract the acid intoxication produced, which *in turn produces the* generalized toxemic swelling and degeneration of all the body tissues.[8] When there is present oliguria, with blood and casts in the urine, we have evidences of acute kidney injury. This discernible kidney injury is merely an indication of an injury common to all the body tissues, for we know that the entire organism has been bathed by the mercury. The alkali is not given as an eliminant, but to counteract acid intoxication, edema and cloudy swelling, which, if permitted to go on, proceed to fatty degeneration and irreversible cell damage (necrosis).

Sansum,[9] in a recent paper, seems to believe that the basis for the use of alkali is to be found in its power to increase diuresis with a secondary washing out (increased elimination) of mercury. Because he finds no increased mercury elimination, he leads his readers to suppose that the use of alkali as a therapeutic agent is valueless. The alkali, however, is not used solely for its eliminatory action, but to inhibit and to counteract damage to the tissues which mercury, if left to itself, produces.

At present we can report on fifty-four consecutive cases of mercurial poisoning with but three deaths. Of the three patients that died, two received the treatment only after unavoidable delay, and one had a preexisting nephritis and cirrhosis.

METHOD OF TREATMENT

Essentially the treatment which I have proposed consists of an early washing out of the mercury salt from the stomach and intestine and continued introduction of sufficient alkali to overcome the acid intoxication.

The patient should come under observation as early as possible, for I have found that when the treatment is delayed for any reason, the symptoms produced by the mercury posioning become more difficult to control. Two patients of my series died, I think, because treatment was commenced too late.

I usually wash out the stomach with a mixture of 1 quart of milk and the whites of three eggs, following this by a saturated solution of sodium bicarbonate until the stomach washings return clear. Finally, before the stomach tube is removed, from 3 to 4 ounces of crystallized magnesium sulphate dissolved in from 6 to 8 ounces of water are allowed to remain in the stomach. A soap suds enema is then given.

Usually the patient vomits shortly after taking the mercury, thereby aiding in the elimination of the poison.

The next step is to introduce alkali, and we give the alkali by mouth, rectum and intravenously. As soon as possible after washing the stomach, the patient is given Fischer's solution intravenously. Fischer's solution consists of crystallized sodium carbonate, 10

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3. Rosenbloom, J.: A Note on the Distribution of Mercury in the Body in a Case of Acute Bichlorid of Mercury Poisoning, Jour. Biol. Chem., 1915, **20**, 123.

4. Lewis, D. S., and Rivers, T. M.: Chemical Studies on a Case of Bichloride Poisoning, Johns Hopkins Hosp. Bull., 1916, **27**, 183.

5. MacNider, W. de B.: A Study of Acute Mercuric Chlorid Intoxication in the Dog with Special Reference to the Kidney Injury, Jour. Exper. Med., 1918, **27**, 519.

6. MacNider, W. de B.: The Inhibition of the Toxicity of Uranium Nitrate by Sodium Carbonate, and the Protection of the Kidney Acutely Nephropathic from Uranium from the Toxic Action of an Anesthetic by Sodium Carbonate, Jour. Exper. Med., 1916, **23**, 171-187.

7. Weiss, H. B.: A Method of Treatment of Mercuric Chlorid Poisoning, The Journal A. M. A., June 2, 1917, p. 1618; The Treatment of Bichlorid of Mercury Poisoning, Ohio State Med. Jour., 1917, **13**, 595.

8. Fischer, M. H.: Edema and Nephritis, New York, John Wiley & Sons, 1915.

9. Sansum, W. D.: The Principles of Treatment in Mercuric Chlorid Poisoning, *The Journal* A. M. A., March 23, 1918, p. 824.

gm. ($Na_2CO_3.10H_2O$), (or 4.2 gm. of the ordinary "dry" salt); sodium chlorid, 15 gm., and distilled water, 1,000 c.c.

Depending on the state of the circulatory system, from 1,000 to 2,000 c.c. of the solution are given intravenously as a first dose. We continue the alkaline medication by giving 8 ounces of "imperial drink" every two hours. This drink consists of: potassium bitartrate (cream of tartar), 4 gm. (1 teaspoonful); sodium citrate, 2 gm. (½ teaspoonful); sugar, 2 gm. (½ teaspoonful), and water, 240 c.c. (8 ounces).

This drink is flavored with lemon or orange juice. The patient is allowed large quantities of it.

There is no restriction in diet at any time during the treatment.

As an indication of the severity of the acid intoxication, and as a guide to the amount of alkali and salt that needs to be given, we use the analysis of the urine. Except in suppression cases (which were rare in our series), the patient voids large quantities of urine, the amounts depending on the amount of fluid taken. The urine should become alkaline to methyl red (a saturated solution of methyl red in alcohol) and be kept so, for Fischer has demonstrated that if the urine of a nephritic cannot be maintained alkaline to methyl red, the patient continues in a serious state. If the output of urine is not seen to be maintained, and if its reaction does not become alkaline to methyl red after the first intravenous injection, a second intravenous injection is given the following day, and general alkali administration by mouth or rectum is continued.

RESULTS

Under this treatment, there is usually produced and maintained a free secretion of urine which *remains* alkaline; and an output of albumin in the urine, which usually develops early, rapidly disappears. Ordinarily, two intravenous injections of the alkali, together with the solution of potassium bitartrate and sodium citrate, which is given at hourly or two hourly intervals day and night (when the patient is not asleep) has been found sufficient to keep the urine alkaline and to keep the output of urine normal. The blood and casts in the urine are usually quickly dissipated. The patient is kept under observation for about ten days after the urine has become normal, and is then discharged.

I have shown previously[10] that patients treated early show fewer symptoms and make a more rapid recovery than those in whom treatment is delayed.

We have performed phenolsulphonephthalein tests on most of our patients, and it is interesting to note that those who were treated early showed only slight or no diminution in phenolsulphonephthalein output. When the output was diminished, it rapidly rose to normal and continued so. In one patient who developed an anuria for three days,[10] the phenolsulphonephthalein output was practically zero for five days after he commenced to void, and then rapidly rose to 66 per cent. (as shown in the accompanying chart) at the end of thirty-three days. This patient's urine was normal six months after his recovery from the mercuric chlorid poisoning.

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[10] Weiss, H. B. (Footnote 7, first reference).

Value of Authorities.—Authority is useful as a factor in critical judgment; it is fatal as an object of worship.—E. P. Lyon.

THE PULSE AFTER A MARATHON RACE

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The question of the possibility of producing alternation of the pulse by very vigorous and prolonged exertion was the incentive to a study of the pulse of twenty men who ran the annual Boston Marathon of 25 miles from Ashland to Boston, April 19, 1916.

Myocardial exhaustion resulting from damage such as that produced by arteriosclerosis or syphilis has been shown to be an important cause of alternation of the pulse. The greater the strain on such a heart, the more marked is likely to be the alternation. The strain necessary to sustain a high blood pressure is especially likely to bring out alternation. Extreme and prolonged tachycardia, as in auricular flutter or paroxysmal tachycardia, may result in pulsus alternans. But it has never been shown, so far as I am aware, that alternation has been found in the pulse of a normal individual after severe exertion. Von Tabora[1] stated that he had been unable to detect pulsus alternans in cyclists who had covered the distance from Leipzig to Strassburg, a distance of 260 miles as the crow flies; no note was made as to the speed of the cyclists.

The Marathon run is probably as severe a physical effort as has ever been undertaken in athletic contests, and many of the men who finish are in a state of collapse after the race. It was from twenty contestants that radial pulse tracings were taken with the Mackenzie ink polygraph within five minutes of the time they completed the race. Tracings covering two or three minutes' time were taken in each case. Three polygraphs were used. The men investigated were all young and healthy. Their positions at the finish were: 3, 4, 6, 7, 8, 10, 13, 14, 16, 17, 18, 19, 20, 21, 22, 23, 25, 27, 29 and 32. Thirteen of them finished the 25 miles within three hours, and the third man in ran the race in two hours, twenty-eight minutes and thirty seconds.

No alternation of the pulse was found in any tracing. Marked sinus arrhythmia was found in two cases, but the only abnormal arrhythmia was one ventricular premature contraction found in the third man to finish. This premature contraction was not followed by alternation. The pulse rates as calculated from the tracings ranged from 72 to 107, with an average of 91. In general, the pulse is smaller after the race than before.

In 1915, the pulse of six of the runners was felt before and immediately after the race. The rates were: 64 before and 136 after, 86 and 120, 60 and 140, 62 and 108, 80 and 80, 118 and 110. The last man noted was the winner; he was obviously very nervous before the race, as he had good hopes of winning. These pulse rates were taken with the men standing, while the tracings were taken in 1916 with the men lying flat. The rapid vagal action probably accounts for the generally slower rates found in the latter group. No irregularity was felt in 1915. In the case of one runner who collapsed on the course and who was brought in by automobile to the finish, a thready pulse of 80 was counted. He seemed to be in a condition of shock.

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[1] Von Tabora, verbal communication to Gravier, L.: L'Alternance du cœur, Paris, 1914, footnote, p. 278.

Electrocardiograms taken in 1915 of the winner, Fabre, and of a runner who finished late in the list, showed nothing abnormal except possibly very slight prolongation of conduction time. They were taken two hours after the finish of the race. The winner had at the start of the race the highest pulse rate counted, 118. It was 110 when he finished.

SUMMARY

Marathon racing does not exhaust the healthy heart sufficiently to produce alternation of the pulse.

A FILTRABLE TOXIC PRODUCT OF THE HEMOLYTIC STREPTOCOCCUS *

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AND
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The following is a brief statement of the methods and results of experiments in which a filtrable substance toxic for rabbits has been obtained from cultures of hemolytic streptococci isolated in cases of bronchopneumonia occurring in Army camps. Though various workers at different times have obtained toxic materials from streptococci, yet we have so far been unable to find any report of methods or results directly analogous to these. The observations that led to the work were made simultaneously and independently by each of us.

The essential feature of the method was the cultivation of the streptococcus in a medium consisting of sterile, defibrinated rabbit's blood diluted with Locke's solution. The Berkefeld filtrates from such cultures were acutely toxic for rabbits, while uninoculated hemolyzed controls incubated for the same time were nontoxic. Toxicity in the culture medium did not appreciably appear before eighteen hours, reached its maximum at about forty-eight hours, and was still evident at ninety-eight hours. No definite relation between oxygen tension or anaerobiosis and toxicity of culture filtrates could be determined. Until the present time the greatest toxicity has been obtained from a blood-Locke's mixture that gave a reading of about 20 per cent. hemoglobin with a Sahli hemoglobinometer. A Locke's solution containing 0.15 per cent. of glucose has seemed most effective for dilution. This mixture when inoculated and incubated at 37 C. for forty-eight hours has yielded a sterile filtrate, 0.5 c.c. per kilogram of which killed three out of twelve rabbits injected simultaneously, while 1 c.c. per kilogram killed five out of six. This illustrates the fact that within certain limits there was a distinct individual variation in the susceptibility of different rabbits to a constant dosage. Six different strains of streptococci were grown in this medium, and all yielded toxic culture filtrates. When injected into rabbits, an incubation period varying generally from four to twenty-four hours elapsed before the symptoms appeared, the time depending to a considerable extent on the dosage. These symptoms were a slowly increasing weakness, accompanied often but not invariably by diarrhea, with death finally occurring with or without convulsions. Intravenous, subcutaneous or intraperitoneal injection gave death in about the same period of time. As controls, other nonrelated organisms were grown in the medium. Single strains of *Bacillus coli*, *B. lactis-aerogenes*, a gram-negative organism obtained from the air, and a hemolytic *Micrococcus catarrhalis* grew abundantly and produced hemolysis in the medium; but after filtration when injected into rabbits, no toxicity was demonstrated. This indicated that the toxicity that appeared in streptococcus cultures was not dependent alone on hemolysis.

While the medium described above is efficient in yielding a toxic filtrate, numerous experiments were carried out to determine some factor which, in the presence of the growing organisms, was necessary for the production of this toxic effect. Various modifications of meat infusion broth were invariably negative with the strains of organisms used. Rabbit's liver, spleen, kidney and heart muscle when washed free from blood and chopped and mixed with Locke's solution, while allowing a luxuriant growth of the organisms, gave nontoxic filtrates.

Rabbit blood serum did not yield any toxicity. If, however, the washed corpuscles from this blood were mixed with a volume of Locke's solution equal to that of the serum removed and the streptococcus grown in this medium for forty-eight hours, the resulting filtrate showed the full toxicity. The toxic product of the streptococcus growing in a medium of blood seemed, therefore, to be derived from some factor in the red blood cells. An attempt was made to separate the various constituents of the red blood cells to determine, if possible, which factor was the source of the toxic substance. Blood cells were washed with Locke's solution, and the stroma obtained in a pure, colorless condition according to the method of Woodbridge. No toxicity could be obtained from a medium consisting of Locke's solution and this purified stroma. A cholesterinized broth medium was negative. The filtrate from a culture in a colorless medium made by the precipitation of the blood pigments with chloroform from washed corpuscles, containing about 12 gm. of protein per liter, was nontoxic. Globulin obtained from washed corpuscles by the method of Morend was dissolved in alkaline Locke's solution and then neutralized. Growth of the organisms was excellent, yet large doses of the filtrate were nontoxic. The chemical preparation of these fractions obviously alters their native condition, yet the negative findings are of interest. These experiments, therefore, suggest at least that the toxic effect of the streptococcus growing in the rabbit's blood medium is due to a substance or substances elaborated in the interaction between the growing organisms and the hemoglobin fraction of the red blood cells.

Certain characteristics of this toxic substance were determined. It did not produce any hemolysis in vivo or in vitro, though the growth of the organisms in the medium itself caused extensive hemolysis. The toxic material was definitely dialysable through collodion membranes of the proper degree of permeability. While the dialysates were seldom as pigmented as the original medium, no toxic dialysates were obtained that were entirely colorless. Complete thermal inactivation occurred at 50 C. in thirty minutes without a demonstrable change in the physical properties. Heating to 45 C. for the same length of time gave no alteration in toxicity. Toxic culture filtrates showed a marked diminution in toxicity after standing a few days in the ice box. Exposure of a rabbit to sunlight did not increase the effect of a toxic injection.

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*From the Pathological Laboratory of the Johns Hopkins University.

Immunologic tests, as far as they have been conducted, yielded the following results: Toxic filtrates were injected into rabbits in increasing amounts. Immunity was acquired against multiple lethal doses. It was found possible, occasionally, by beginning with small inoculations, to double the dose at successive daily intervals without any noticeable reaction aside from variations in weight. Until the present time no attempt has been made to increase the immunity beyond six lethal doses; but the ease with which this degree of resistance was acquired would indicate that a much higher degree could be established. This immunity, at the end of about a month since the last injection, did not seem to be diminished. An immunity against the toxic product of one organism also gave an immunity against that of another. Blood from an immune rabbit conferred a certain degree of passive immunity on normal rabbits injected with lethal doses of toxic material. For example, a normal rabbit given 1 c.c. per kilogram of toxic filtrate intravenously died in thirty hours. Five other normal rabbits were given 2 c.c. per kilogram of the same toxic filtrate mixed with 0.1, 0.25, 0.5, 1 and 2 c.c. of defibrinated immune blood. Aside from a temporary slight weakness in those with the smallest amount of blood, no effect was evident. Immune serum also confers this passive immunity. Normal blood and serum did not have a comparable degree of protective power.

A series of rabbits immunized against toxic filtrates was given varying quantities of living virulent streptococci. Not only were they resistant against minimal lethal doses of the organisms, but in several of the animals large intravenous injections of the living cultures were tolerated. As much as 20 c.c. per kilogram of a culture gave no symptoms in a rabbit which more than a month previously had received the last injection of three lethal doses of a toxic filtrate. A normal control died in forty-eight hours with 1 c.c. per kilogram of the same culture. It was quite evident in this series, therefore, that immunity against the toxic product of the organisms gave an immunity against the organisms themselves, and that an active immunity persisted for at least a month. This immunity was also effective against strains of the hemolytic streptococcus other than that which was used as antigen.

The question as to whether immune serum will or will not confer a passive immunity against living organisms has not as yet been definitely determined.

The relation between the toxic filtrates and the virulence of the organisms is illustrated by one experiment in which one fifth of the lethal dose of toxic filtrate increased the rabbit's susceptibility to such an extent that one fortieth of the lethal dose of living culture caused death.

A few experiments have been carried out in which the pneumococcus and staphylococcus have been cultivated in the rabbit blood-Locke's medium in the same way and have been found to yield filtrates that were toxic for rabbits.

SUMMARY

It has been found that hemolytic streptococci grown in rabbit's blood diluted with Locke's solution yield a filtrate that is toxic for rabbits occasionally in doses as low as 0.5 c.c. per kilogram. The formation of this toxic material is dependent on the presence of hemoglobin. It is destroyed by heating to 50 C. for thirty minutes; it is dialysable; it requires a certain incubation period in the animal before exerting its toxic effects; it is nonhemolytic in vivo or in vitro; it slowly loses its toxicity on standing at ice box temperature; an immunity can be rapidly established against it, and the blood of immune rabbits when injected with the toxin has the power of neutralizing its toxic effects; rabbits immune against the toxic substance are resistant to living streptococci.

THE TREATMENT OF AMEBIC DYSENTERY WITH IPECAC BY RECTUM

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Brem and Zeiler,[1] in 1911, successfully used ipecac by rectum and through the appendix after appendicostomy in several cases of amebic dysentery that had not yielded to other methods of treatment. This method does not seem to have come into any general use. We have been using a similar method for about five years, although, up until recently, we were ignorant of Brem and Zeiler's work. Our number of cases has been somewhat limited, and it is only in the past year that we have been able to test this method to our satisfaction. Our method of procedure is to put 60 or even 120 grains of powdered ipecac into about 24 ounces of water; this is kept hot for an hour, but not allowed to boil. After washing out the bowel with warm water, this whole preparation, without filtering, is given slowly by rectum to be retained as long as possible. If there is much pain and tenesmus, only a part of this can be given. In a few of our cases, there was some discomfort and the treatment had to be slowed down. Formerly, we used this method of treatment, and, at the same time, gave the salol-coated ipecac pills. Later on emetin (alkaloid) came into use; we used this hypodermically and gave the ipecac by rectum. In two cases—which we are reporting—the ipecac was used by rectum without other treatment:

Case 1.—J. T. M., white man, aged 63, presented himself for examination, Dec. 4, 1917, complaining that the rectum felt as if it would pull out, and of having from five to six stools a day. The general history was negative except for a severe typhoid at the age of 31. The present illness began five years before, while the patient was selling groceries in Roanoke, Va. He gradually commenced to have a diarrhea, which has been better at times and worse at others. In 1915 he was kept in bed one month and treated with quinin enemas. In the spring of 1916 he was given emetin hypodermically in rather large amounts, with salol-coated ipecac pills by mouth, and was also given chaparro amargosa without much improvement. In February, 1917, he was given arsphenamin intravenously with improvement for nearly four months, with relapse at the end of this time. Later on, he was given another treatment of arsphenamin without any improvement. Since then he had fared badly, as a rule; the bowel was always full of gas and there were from two to six movements a day, with some blood-tinged mucus. The man was undernourished, but in fairly good shape as a whole. Rectal examination revealed a large number of superficial yellow ulcers; the mucus from the rectum showed much pus, red blood cells and many large active motile amebas containing red blood cells. The Wassermann test was negative. The patient was given the ipecac preparation by rectum every day, with immediate betterment of symptoms. The amebas, pus and blood soon disappeared from the stools, and for five and a half months he has had no trouble whatever. He has been using an occasional ipecac treatment during this time. At no time during this treatment has he been dieted in any way, or has he stopped his regular work.

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[1] Brem, W. V., and Zeiler, A. H.: Medical Treatment of Amebic Dysentery, New Orleans Med. and Surg. Jour., July, 1911.

Case 2.—H. E. D., man, developed amebic dysentery while a soldier in the Philippine Islands during the Spanish-American War. It took him a long time there to get well. He remained in good shape until about five years ago, when the dysentery increased, and, on presentation for examination, he showed very many motile amebas containing red blood cells; he also showed a heavy trichomonas infection. We began immediately to use the ipecac by rectum. The symptoms disappeared almost at once, and the amebas disappeared almost immediately from the stools.

We believe that the hypodermic emetin treatment for dysentery can be greatly aided by also giving ipecac by rectum. It certainly seems preferable to apply a treatment locally rather than have it traverse the whole alimentary canal before reaching the seat of the disease. It also seems better to use the ipecac, or some form of ipecac, by rectum rather than give it hypodermically where it will diffuse through all the tissues of the body by the time it reaches the seat of the disease. Since the barium enemas can be seen with the fluoroscope to pass up to the cecum, we believe this ipecac preparation very rapidly spreads to all the surface of the large bowel, where it can have a direct local effect and the soluble portion can be absorbed even into the deeper tissues. The administration of ipecac by rectum has the advantage that it can be used by the patient when away from his physician.

Clinical Notes, Suggestions, and New Instruments

A NEW CONTACT TEST FOR ALBUMIN IN URINE*

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Certain observations, made over a period of years, convinced me that a rapid and reliable contact method for the detection of albumin in urine was desirable. The method described is the outcome of nearly three years' work with various reagents.

Because of its general use and reliability, the heat test has been taken as a standard. A number of reagents, such as Tanret's solution, were tried out and found to be entirely too sensitive. Positive reactions were obtained with mucin and proteose in urines which were otherwise normal. Still other reagents, such as concentrated nitric acid, were found to be less sensitive than the heat test, negative reactions being frequently obtained with pathologic specimens.

The heat test, although very reliable, is too time consuming when a large number of specimens are to be examined. The use of acid in dissolving phosphate precipitates may also carry the albumin into solution, if only a faint trace is present. The agitation necessary to dissolve the precipitate completely may so diffuse the albumin that the reading is doubtful. The method described is very rapid and duplicates closely results obtained by the heat test. The technic of applying the test has been in use for a number of years, being formerly used for the nitric acid contact test.

This solution being too concentrated for use, 100 c.c. should be diluted to 150 c.c. with distilled water. The dilute solution will keep.

Picric acid is an excellent protein precipitant, but for the detection of albumin in urine, it must be used in a concentration that will not give false positive reactions. After careful study the quantity given in the formula was found to meet this requirement. The citric acid will prevent the possible precipitation of phosphates. The magnesium sulphate, which will precipitate serum globulin, is used primarily to give the solution a high specific gravity. This prevents diffusion of the reagent with the urine, the zone of contact remaining well defined.

REAGENT *

Picric acid, wet	10 gm.
Magnesium sulphate	400 gm.
Citric acid	20 gm.
Distilled water	1,500 c.c.

* Picric acid, wet, is the product ordinarily supplied, containing 20 per cent. added water for safety in shipping. The magnesium sulphate used is the U. S. P. crystalline salt.

TECHNIC

An ordinary, heavy wall culture tube, 150 by 15 mm., and a piece of glass tubing 20 cm. long, with a diameter of 6 mm. and 1 mm. wall are procured. The reagent is poured into the test tube to a depth of about 4 cm. It is advisable to use the centrifuged specimen, as the organized elements, in suspension, may give a false reaction, the same as with the heat test. The glass tube is introduced into the specimen to a depth of about 2 cm. The end of the tube is closed with the finger, as in using a pipet, and the tube is withdrawn and introduced into the reagent so that the level of the urine is slightly lower than that of the test solution. The finger is now removed and the urine and reagent will rise in the tube, giving a distinct zone of contact without diffusion. The tube may be removed to facilitate the reading, the finger being held between the light and the tube. In the presence of albumin a white ring will form, the intensity indicating the quantity. Faint traces, as found by the heat test, may be easily detected by this method. After each test the tube should be rinsed by being dipped in water. If the reagent in the test tube becomes cloudy, it should be discarded, as it is essential that the reagent and urine be clear. With a little experience, an estimation of the quantity of albumin can be as readily made as with the heat test.

RESULTS OBTAINED

A series of 725 specimens was examined by the heat test and with the new reagent. The sediment was also examined as a check on the chemical results. For convenience, the new reagent will be referred to as Solution B.

TABLE 1.—RESULTS OF TESTS

Negative.	Positive.	Positive	
		with Heat.	with Solution B
500	225	205	213

It will be noted from Table 1 that out of a total of 725 specimens, 225, or 31.03 per cent., were positive with either heat or Solution B, or both. Of these, 205, or 28.27 per cent., were positive with heat, and 213 or 29.38 per cent., were positive with Solution B. Out of the 225 positive specimens, twenty gave reactions with B which were negative with heat. With the heat test, twelve were positive which failed to react with the new reagent.

TABLE 2.—VARIATIONS DISCLOSED BY MICROSCOPIC EXAMINATION

Sediment—	Positive with Heat. Negative with Solution B.	Positive with Solution B. Negative with Heat.
Pathologic	8	14
Normal	4	6

The microscopic examination of all specimens confirmed the chemical results, except in a few cases, as noted in Table 2, in which it will be seen that positive reactions were obtained by both tests, in a few cases, in which the sediment was normal. Also a few pathologic specimens failed to react with one of the reagents, either heat or solution B. These variations were all found in urines showing only a trace or faint trace of albumin, and are to be expected.

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*From the Pathological Laboratory, Base Hospital, Camp Gordon, Ga. The greater portion of this work was carried on while the author was assistant director at the National Pathological Laboratory, New York.

Military Medicine and Surgery

THE PREVAILING PANDEMIC OF INFLUENZA

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During the past two weeks, August 28 to September 11, there has begun a severe and rapidly spreading epidemic of influenza in the First Naval District. More than 2,000 cases have been reported in these two weeks, and there are indications of a rapid spread of the infection. This is undoubtedly the same disease which, first heard of in Spain last spring, and hence called Spanish influenza, has in recent months spread over nearly all of Europe, including Germany, Italy, France, England and Ireland, attacking from 30 to 40 per cent. of the people. The outstanding feature of this epidemic is its high degree of communicability; in fact, in pandemics of this nature, influenza is the most contagious of all infections. The last pandemic (1889-1890) also moved from east to west along the lines of travel. We, therefore, have every indication that this outbreak will soon spread all over the United States. It doubtless has been carried to this country by patients or carriers aboard vessels. In fact, definite histories to this effect have been obtained from officers aboard vessels.

The disease is similar to the familiar endemic influenza, except that it is often more severe, the complications are more frequent and serious, and it shows an extraordinary degree of contagiousness. The number has increased to more than 2,000 within two weeks, in spite of early recognition and reasonable precautionary measures. It has attacked many of the physicians, nurses and hospital apprentices, thus unduly taxing the hospital service, in spite of the use of gauze masks and other precautions by all those in contact with the patients.

CHARACTERISTICS OF THE DISEASE

The incubation period is from one to two days. This was demonstrated by the first cases that developed in the hospital staff after the arrival of the first group of fifty patients. These patients were received Thursday afternoon, August 28, from the receiving ship at Commonwealth Pier, Boston. Blood cultures, blood counts and throat cultures were immediately taken by the laboratory officers, one of whom was suddenly taken sick with the disease the following Saturday morning. Another medical officer, who made the first physical examinations on Thursday, was also sick Saturday.

The onset is very sudden; the patient sometimes passing from an apparently well condition almost to prostration within one or two hours. There is no complaint of sore throat at any time, and no initial localized symptoms. In a few cases the patient attributes the attack to a slight sore throat or ill feeling a few days previously, but the majority give no such history. The fever rises rapidly to from 101 to 105 F. (38.3 to 40.6 C.), the patient usually complaining of severe headache, weakness, general malaise and pains of varying severity in the muscles and joints, especially in the back. As frequently described, the patient feels as though he had been beaten all over with a club.

The course is fairly constant. The patient lies in bed in a semistuporous condition, doubled up, with the covers pulled tightly over his head and neck. There are alternating chilly and warm sensations, but no paroxysmal chill. The face is flushed, the pulse from 100 to 120, the respiration from 20 to 30, the temperature from 101 to 105 F. A few have nausea and vomiting. Epistaxis is not uncommon. There are usually no gastro-intestinal symptoms, the tendency being toward a slight constipation.

After these initial symptoms, which are quite constant, a remission frequently occurs in the morning of the second or third day. In a small percentage of the cases the temperature may continue normal, with recovery. More frequently there is a secondary rise of temperature following the remission, accompanied by a coryza and slight bronchial cough. It is during this period that the disease probably is most contagious, being transmitted almost entirely by direct contact, and by droplet infection within a radius of a few feet.

TABLE 1.—LEUKOCYTE AND DIFFERENTIAL COUNT OF EARLY CASES FROM ONE WARD

Cases	White Blood Cells	Poly-morpho nuclears	Lym-pho-cytes	Large Mono-nuclears	Transi-tionals	Eosino-phils	Baso-phils
1	6,200	76	20	2	2		
2	6,800	65	38	1	5	....	1
8	8,400	77	14	8	6		
4	10,000	73	25	1	1		
5	5,600	44	50	...	6		
6	6,800	72	24	2	2		
7	7,200	80	20				
8	7,200	88	12				
9	4,400	54	44	2			
10	8,000	74	20	4	2		
11	6,800	68	30	2			
12	6,600	52	45	...	2	1	
18	4,200	60	40				
14	4,600	50	46	2	2		
15	5,200	52	46	2			
10	5,800	48	52				
17	4,200	48	52				
18	6,800	64	28	4	2	2	
19	7,200	72	26	...	...	2	
20	6,800	68	30	...	2		
21	4,600	66	34				
22	5,800	40	56	...	4		
23	8,600	75	24	...	...	1	
24	7,200	78	16	4	2		
25	4,400	56	36	4	4		
26	4,200	68	32				
27	5,000	70	28	2			
28	5.400	56	43	...	1		
Average	6,700	63.7	33.3	1.2	1.2	0.21	0.035

Following this secondary rise, the temperature in uncomplicated cases gradually returns to normal within a week, but the patient is usually still coughing, and feeling rather weak. It requires another week of convalescence before returning to duty is advisable, and then the patient fatigues very easily, and shows distinct effects of the infection. Relapses have not occurred in the short period covering this report.

The laboratory findings in the cases described above are rather constant and characteristic. Blood cultures taken at all stages of the disease have been negative. Improved technic may change this result, but this now appears doubtful, for the disease seems to be a toxemia. The white blood cell count in uncomplicated cases is below normal. The differential leukocyte count is essentially normal. Table 1 illustrates thirty representative cases, taken in one ward as the patients entered in the various stages of the disease, from the first to the third or fourth day. The urine in fully two thirds of the cases shows a faint trace of albumin, and numerous granular and hyaline casts. No case of nephritis has developed. The urine is characteristic of a severe febrile and toxic disease. Table 2 shows the significant urinary findings in the cases of one ward, as they entered.

The remaining 5 to 10 per cent. of the patients in this epidemic develop a very severe and massive bronchopneumonia. Of the ninety-five cases of pneumonia in the hospital developing from the influenza, thirty-five patients have died, and another fifteen or twenty are desperately ill. This would indicate a final mortality of from 60 to 70 per cent. In a case of progressive or extensive involvement, the patient rarely recovers. The bronchopneumonia appears as a continuation or extension of the bronchitis, present in a large percentage, so that there is rarely any remission of the symptoms after the second or third day, and physical signs of pneumonia develop. The consolidation appears most frequently in the right inferior lobe, just medial to the inferior angle of the scapula. The same tendency has been noted in pneumonias in general, but especially in bronchopneumonias. It probably is due to the anatomic relation of the right bronchus, this bronchus presenting a larger opening than the left within the trachea, and being shorter, larger and in more direct line with the trachea than the left, so that gravity and direct extension would favor the first appearance of involvement in the posterior upper portion of the right inferior lobe.

TABLE 2.—URINE EXAMINATIONS FROM EARLY CASES OF ONE WARD

Cases	Specific Gravity	Albumin*	Microscopic
1	1.029	Neg.	
2	1.025	F. T.	Many hyaline and granular casts
3	1.033	Neg.	
4	1.025	V. F. T.	A few granular and blood casts; many red blood cells
5	1.028	Neg.	
6	1.029	Neg.	
7	1.014	Neg.	
8	1.030	F. P. T.	Hyaline and granular casts
9	1.028	V. F. T.	A few hyaline and granular casts; also pus cells
10	1.028	F. P. T.	A few hyaline and granular casts; a few pus cells
11	1.028	V. F. T.	A few pus cells
12	1.028	V. F. T.	Many hyaline and granular casts
13	1.028	Neg.	
14	1.014	Neg.	
15	1.027	F. P. T.	Many hyaline and granular casts
16	1.031	V. F. T.	Hyaline casts and a few pus and red blood cells
17	1.016	F. P. T.	Numerous granular and hyaline casts; a few pus cells
18	1.026	F. P. T.	Granular and hyaline casts
19	1.029	V. F. T.	Many hyaline and granular casts; a few pus cells
20	1.023	V. F. T.	Numerous granular and hyaline casts
21	1.029	F. P. T.	A few pus cells
22	1.028	V. F. T.	Numerous hyaline and granular casts

* Abbreviations: Neg., negative; F. P. T., faint possible trace; V. F. T., very faint trace; F. T., faint trace of albumin.

The bronchopneumonia extends very rapidly to the left inferior, the right upper and middle lobes, and finally to the left superior lobe, so that in many of the earlier cases death is distinctly one of asphyxiation. In cases of longer duration a severe toxemia is evident. The leukocyte count is very variable, frequently maintaining the leukopenia that is characteristic of the initial disease (Table 3). This persisting leukopenia can usually be interpreted as due to an uncomplicated influenza bacillus pneumonia, since this organism apparently calls forth no defensive leukocytosis in the circulating blood. The necropsies have corroborated this interpretation. The accompanying chart illustrates such a case. More frequently, however, there is a leukocytosis, this representing a secondary infection with either the pneumococcus or the streptococcus.

A purulent effusion or empyema does not develop in the pleural cavity. This may be due partly to the short duration of the pneumonia before death. In the terminal stages, with embarrassed and failing circulation, there is frequently a serofibrinous effusion into the pleural cavity, most frequently unilateral and on the right side, varying in amount from 100 to 1,000 c.c. The cell count of this fluid is rarely over 5,000 per cubic millimeter, chiefly polymorphonuclears. This fluid usually contains pneumococci or streptococci.

The gross pathology revealed at necropsy shows a massive and largely confluent bronchopneumonia, thus frequently simulating a lobar pneumonia. In the early cases, however, and in the more recent areas of the later cases, the bronchopneumonic type is very evident. The cut surface has a mottled, firm, granular appearance, each bronchiole standing out as a grayish area, with intervening dark red alveolar tissue. The coarse, nodular consolidation of a typical bronchopneumonia is rarely present. A large quantity of blood exudes from the cut surface. In the more prolonged cases this rather uniform bronchopneumonic consolidation passes through a more firm, gray stage, and then to a characteristic condition of diffuse and confluent small abscesses. These may be seen from the surface as flat, grayish yellow areas maintaining the markings of the lung lobules. Creamy, grayish yellow pus exudes from the cut surface in all regions, leaving a slight reticulum of necrotic lung tissue.

The remaining organs are essentially normal in appearance, except for a moderate degree of congestion. The heart in one case was acutely dilated. The liver and spleen are slightly enlarged. The spleen rarely shows the enlarged, soft, flabby condition so frequent in other forms of pneumonia. The cut surface is firm, dark red, smooth, and with indistinct markings. The kidneys are congested but otherwise of normal appearance. Microscopic examination of the tissues has not been completed, but will be made the subject of a separate report on the pathology of the disease, this being quite distinctive in the lung tissues.

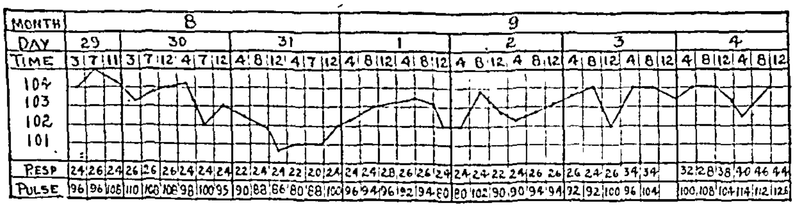
TABLE 3.—LEUKOCYTE AND DIFFERENTIAL COUNT OF PNEUMONIA CASES FROM ONE WARD

Case	White Blood Cells	Polymorphonuclears	Lymphocytes	Transitionals	Large Mononuclears	Basophils	Eosinophils	Temperature
1	26,200	81	18	1	...	..	..	104
2	29,000	89	10	1	...	..	..	100
3	14,600	73	26	1	...	..	..	104
4	14,600	80	19	..	...	1	..	100
5	13,600	71	24	3	...	2	..	104
6	10,000	82	17	1	...	..	..	99
7	37,000	77	20	1	2	2	..	103
8	17,600	75	16	4	5	..	..	102
9	29,900	91	8	1	...	..	..	100
10	17,200	78	19	2	1	..	..	103
11	10,000	78	20	2	...	..	..	99
12	7,000	88	10	2	...	..	..	99
13	13,000	80	20	..	...	..	..	102
14	17,000	87	10	3	...	..	..	104
15	13,600	86	12	..	2	..	..	102
16	28,800	82	14	2	2	..	..	102
17	4,600	78	19	2	1	..	..	103
18	14,800	96	4	..	...	..	..	101
19	12,600	70	28	2	...	..	..	102
20	12,200	84	16	..	...	..	..	103
21	7,800	67	29	3	1	..	..	101
22	6,400	66	34	..	...	..	..	104
23	7,400	53	46	1	...	..	..	101
24	10,000	56	42	2	...	..	..	99
25	3,600	84	16	..	...	..	1	104
26	16,800	56	36	3	...	..	..	99
27	6,800	56	40	4	...	..	..	101
28	9,000	61	36	3	...	..	..	99.5
29	12,200	82	16	2	...	..	..	103
30	15,800	76	22	2	...	..	..	100
31	19,400	78	18	2	2	..	..	103
Aver.	13,980	76.16	21.5	1.6	0.52	0.16	0.03	101.8

BACTERIOLOGIC FINDINGS

The bacteriology of this epidemic has been the subject of special study, on account of the unusual severity and communicability of the disease, and its disputed relation to the common endemic disease known as influenza. The influenza bacillus has been generally accepted as the etiologic micro-organism of influenza. Pfeiffer discovered the influenza bacillus in 1892, two years after the great pandemic of influenza of 1889-1890. This pandemic spread rapidly over all parts of the world, attacking between 40 and 50 per cent. of the inhabitants and having a comparatively high mortality. The present pandemic is undoubtedly of the same character and is in all probability the same disease.

The reports of the bacteriology of the present pandemic in Europe serve only to confuse on account of their incompleteness. THE JOURNAL[1] and the London *Lancet*[2] have given the most recent reviews of the conflicting opinions in Europe, including the opinions of the French and the German investigators. The influenza bacillus was found only occasionally. Streptococci, pneumococci and the *Micrococcus catarrhalis* were recovered more frequently from the throat and sputum and occasionally from the blood. Little, Garofalo and Williams[3] selected a pleomorphic gram-positive coccus as the probable etiologic micro-organism, this in all probability being a pneumococcus of the mouth. Gotch and Wittingham[4] are inclined to attribute the disease to the *Micrococcus catarrhalis.*



Clinical chart of an uncomplicated influenza bacillus pneumonia. The patient died September 4. Leukocyte Counts:

	Influenza	Pneumonia	
	August 29	September 1	September 3
Total	6,800	8,800	5,200
Polymorphonuclears	68	64	74
Lymphocytes	30	32	26
Transitionals	2	4	..

In the present epidemic in the naval stations of Boston, throat cultures were made, streaked on blood agar plates, from more than 100 cases, and similar cultures made from washed selected bronchial sputum, in search of the influenza bacillus or other predominating organisms. As a control, a similar number of blood plate throat cultures were taken from convalescent hospital patients. In both lots the predominating organism was a gram-positive diplococcus, with a considerable green area surrounding the small gray colonies and frequently marked pleomorphism noted on smear, probably corresponding to the pleomorphic organism described by Little.[3] Approximately pure cultures of a hemolytic streptococcus occurred in 4 per cent. of the influenza cases, in comparison with 20 per cent. of the control cases. A few colonies of hemolytic streptococcus were found in an additional 16 per cent. of the influenza cases. In the influenza plates there were numerous small, colorless colonies, some of which stained typically as influenza bacilli. But similar colonies could be found in many of the control cultures, and they were by no means constantly found in either lot, so that no conclusions could be drawn from this source. These negative findings in throat cultures may be explained by the difficulty of isolating the influenza bacillus from mixed cultures. Also, it is probable that the focus of influenza bacillus infection is not in the pharynx, but is located in some recess of the nasal cavity, explaining the negative throat symptoms. In this respect the influenza bacillus would be likened to the meningococcus, which selects the posterior nasopharynx for most abundant growth, and the diphtheria bacillus, which usually selects the supratonsillar fossa for its primary focus.

Mouse inoculation of washed selected sputum was made in numerous cases. There was no uniformity of results. Almost all possible organisms were recovered in pure or mixed cultures, pneumococci, *Streptococcus viridans, Streptococcus hemolyticus, Micrococcus catarrhalis* or the influenza bacillus, or the mouse recovered. The sputum of the bronchopneumonia patients usually is not the tenacious, fibrinous, blood-stained sputum of pneumococcus pneumonia, but a purulent, opaque, greenish or yellowish red sputum, showing on smear a predominating gram-positive diplococcus. It resembles more that of the streptococcus pneumonias of the past winter.

The smears and cultures from the lung punctures and necropsies furnished the best evidence of the nature of the infectious process. Table 4, of the results of cultures taken directly from the lungs, shows that the influenza bacillus occurred either in pure or mixed culture in 82.6 per cent. of the twenty-three cases studied thus far. The only cases in which it did not occur were four, in which there were pure cultures of a hemolytic streptococcus. In six cases, or 31.6 per cent. of the positives, there were pure cultures of the influenza bacillus. It should be noted that these pure cultures were all in pneumonias of short duration, none of more than four days' and two of only two days' duration. The influenza bacillus was found in no case in the pleural fluid or in the heart's blood (Table 5). In direct smears from the lung tissue a very small coccobacillus, characteristic of the influenza bacillus, could be identified in many cases with a methylene blue stain, but with difficulty with a gram stain on account of its small size and poor staining qualities. By this means pure cultures and predominant cultures of the influenza bacillus can successfully be predicted from lung smears. It is found almost entirely within polymorphonuclear leukocytes, and in considerable numbers within individual cells, but not within all cells.

The most common secondary invader is the pneumococcus, occurring in thirteen of the twenty-three cases tabulated, or 56.5 per cent. Six of these, 46.1 per cent., were the Type II pneumococcus, two the Type III pneumococcus, and five the Type IV pneumococcus. One patient had both a Type III and a Type IV pneumococcus infection. The differentiation of the Type IV pneumococcus and the pleomorphic forms of the *Streptococcus viridans* is not without difficulty, and some of these on further study may be found to fall within the *Streptococcus viridans* group. Bile solubility tests of broth cultures were not found very reliable for identification of the pneumococci, some of the fixed types, identified by agglutination, not showing a distinct bile solubility. Hence morphology was relied on in the doubtful Type IV cases.

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[1] "Spanish Influenza," editorial, THE JOURNAL A. M. A., Aug. 24, 1918, p. 660.

[2] Bacteriology of the "Spanish Influenza," Lancet, London, 1918, 2, 177.

[3] Little, T. H.; Garofalo, C. J., and Williams, P. A.: Lancet, London, 1918, 2, 34.

[4] Gotch, O. H., and Wittingham, H. E.: Brit. Med. Jour., 1918, 2, 82.

TREATMENT

This frequency of the pneumococcus, especially the Type II pneumococcus, brings up the question of the possible value of sputum typing and antipneumococcus serum therapy in these pneumonias. First, it is noteworthy that no case of a Type I pneumococcus has thus far occurred in the outbreak in this locality. This indicates that the infecting pneumococcus is a common mouth inhabitant, since Type I pneumonias are rarely met at the present time. The second point of interest is the fact that no pure infection with the pneumococcus has yet occurred. In every case of pneumonic complications the influenza bacillus was also recovered from the lung cultures, frequently in as great numbers as the pneumococci or in greater numbers. Considering the presence of six cases of pure influenza bacillus pneumonia, the interpretation is that the influenza bacillus is the primary invader in every case, sufficient in itself to cause a rapidly fatal pneumonia, and that the pneumococcus acts entirely as a secondary or terminal invader. It is questionable if serum therapy, and especially Type II antipneumococcus serum, would have much influence altering the course of the disease.

TABLE 4.—LUNG CULTURES

Case	Influenza Bacillus	Pneumococcus	Streptococcus Viridans	Streptococcus Hemolyticus	Micrococcus Catarrhalis	Staphylococcus Aureus	Day of Pneumonia	Pleural Effusion	Blood Culture
1	+	—	—	—	—	—	4	+	—
2	—	—	—	+	—	—	3	—	—
3	+	+(II)	—	—	—	—	10	+	+
4	—	—	—	+	—	—	4	+	+
5	+	—	—	—	—	—	4	—	—
6	+	+(II)	—	—	—	—	7	+	—
7	+	+(IV)	—	+	—	—	3		
8	+	+(IV)	—	—	—	—	9	+	—
9	—	—	—	+	+	—	5		
10	+	+(II)	—	—	—	—			
11	+	+(II)	—	—	—	+	4	+	—
12	+	—	—	—	—	—	4		
13	+	+(IV)	—	—	—	+	12	—	+
14	+	+(II)	—	—	—	—	6	—	+
15	+	—	—	—	—	—	2		
16	+	—	—	—	—	—	4	+	—
17	—	—	—	+	—	—	5	+	+
18	+	+(IV)	—	—	—	—			
19	+	+(III-IV)	—	—	—	—	6		
20	+	+(IV)	—	—	—	—			
21	+	+(III)	—	—	+	—			
22	+	—	—	—	—	—	2	+	—
23	+	+(IV)	—	—	+	+	..	+	+

However, sputum pneumococcus grouping and antipneumococcus serum therapy should be tried in selected cases. By selected cases is meant those in which the patients are bringing up typical pneumococcus sputum and have a marked leukocytosis, showing that this organism is the predominating one. Indiscriminate routine typing of all cases that show a patch of bronchopneumonia is an impossible task in the present emergency, as well as of doubtful value, for in all cases at necropsy there is found a distinct bronchopneumonia, although at times of such massive and confluent character as to be distinguished with difficulty from lobar pneumonia. A significant feature recently noted is that a separate type of infection may occur in the two lungs, one being both an influenza bacillus and a pneumococcus infection, while the other lung may give a pure culture of a pneumococcus, a streptococcus or a *Micrococcus catarrhalis*.

The hemolytic streptococcus occurred in five of the twenty-three cases, or 22.7 per cent., and in four of these it was the only organism present. As noted previously, these four cases were the only ones of all twenty-three in which the influenza bacillus was absent. This is significant in view of the known extremely invasive properties of the *Streptococcus hemolyticus* and its tendency completely to obscure a primary infecting micro-organism. The low percentage of hemolytic streptococci as secondary invaders in the bronchopneumonias of this disease, compared to their incidence in the postmeasles bronchopneumonias of the past winter, perhaps reflects the low percentage of pure hemolytic streptococci found in the throat cultures of a group of these men as they entered the hospital, being only 4 per cent.

The *Micrococcus catarrhalis* is a fairly frequent secondary invader found in the lungs and in one instance in pure culture in the heart's blood. The *Staphylococcus aureus* occurs infrequently and in small numbers.

THE INFLUENZA BACILLUS

The interpretation of these bacteriologic findings is that the influenza bacillus is the primary invader in all cases of pneumonia accompanying this outbreak of influenza. This pneumonia is always a bronchopneumonia and is frequently complicated by a secondary infection with the pneumococcus or the streptococcus, and less frequently with the *Micrococcus catarrhalis* and the *Staphylococcus aureus*. Separate, double or triple secondary infections may occur.

This tendency of the influenza bacillus to grow in symbiosis or in an ancillary relation with other organisms in the lungs is not necessarily due to the more virulent nature of the secondary invaders, but may be due to a well-recognized property of the influenza bacillus to grow much more luxuriantly in the presence of certain other organisms, especially the staphylococcus, but also the pneumococcus, the streptococcus and numerous other organisms. This is most strikingly illustrated in plate cultures of the influenza bacillus, by the colonies in the vicinity of a staphylococcus colony. These colonies grow to giant size, from 2 to 3 mm. in diameter, in comparison with the remote influenza colonies which remain barely visible at the end of four or five days.

TABLE 5.—HEART'S BLOOD CULTURES AT NECROPSY

Case	Influenza Bacillus	Pneumococcus	Streptococcus Viridans	Streptococcus Hemolyticus	Micrococcus Catarrhalis	Staphylococcus Aureus
1	—	—	—	—	—	—
2	—	—	—	—	—	—
3	—	II	—	—	—	—
4	—	—	—	+	—	—
5	—	—	—	—	—	—
6	—	—	—	—	—	—
7	—	—	—	—	—	—
8	—	—	—	—	—	—
9	—	—	—	—	—	—
10	—	IV	—	—	—	—
11	—	II	—	—	—	—
12	—	—	—	—	—	—
13	—	—	—	+	—	—
14	—	—	—	—	—	—
15	—	—	—	—	+	—

The influenza bacillus in this study was identified by the small size and colorless appearance of the colonies, which were almost imperceptible at the end of twenty-four hours, and then visible only by reflected light. Around a staphylococcus colony they have a distinct gray color on account of their larger size. They are moist and easily removed with a platinum wire and readily emulsify in salt solution. Microscopically, the influenza bacilli appear as exceedingly small gram-negative coccobacilli. There are no specific agglutination or fermentation tests available for further identification of the influenza bacillus. It is nonpathogenic for all laboratory animals except in a few reported instances of monkey inoculation in which the characteristic disease was reported to have resulted.

A fixed strain of the influenza bacillus, such as this organism must be, to act in such a virulent and pandemic manner, has never previously been available for the study of specific serum reactions. The bacillus was not discovered until after the great pandemic of 1889-1890, and there has been no similar pandemic of influenza since, until the present. Work on the specific serum reactions of this strain of the influenza bacillus is now in progress, and it is hoped that specific reactions will be found, probable toxins demonstrated, and possible antitoxins or vaccines prepared that will prove of use in prophylaxis, or in clearing up the chronic reinfective condition so frequently remaining after the first acute symptoms.

The focus of the primary infection most certainly is in the upper respiratory passages, but it gives rise to practically no localizing symptoms during the first day or two of the disease. Then it attacks the nasal mucosa and usually the bronchi. A sore throat is never complained of in the typical cases. Other organisms usually predominate in the pharynx. Further study should locate more specifically the primary focus of infection and the location in carriers.

Speculation as to the probable cause of the beginning of this pandemic of influenza suggests that it may bear some relation to the congregation of such enormous numbers of troops in Europe; that an original slightly pathogenic influenza bacillus, by passage through many individuals in a short period, has become a fixed, highly pathogenic strain of the influenza bacillus.

In the beginning of this study of the etiologic organism of the prevailing pandemic of influenza, an experiment was performed in conjunction with Dr. M. J. Rosenau, director of the Naval Hospital laboratory, on nine volunteers from the Deer Island Naval Training Camp. These men had not been exposed to the disease, there having at that time been no cases at Deer Island. The experiment was for the purpose of determining whether or not the disease was due to a filtrable virus. Certain features of the onset and course suggest strongly a similarity to dengue, yellow fever, trench fever and pappataci fever.

The experiment consisted of introducing the filtrate of the washings from the nose and throat of two cases of influenza into the anterior nares of nine volunteers. The influenza cases selected were typical, with definite history of recent exposure. One was in the second day of the disease and the other in the fourth day. The nose and throat of each patient was washed and gargled with 75 c.c. of sterile physiologic sodium chlorid solution. Throat swabs and sputum were added to the separately collected washings. Each was shaken with beads in a sterile bottle and filtered through a Mandler diatomaceous earth filter by means of a water vacuum pump. One filter had a positive pressure value of 9 pounds and the other of 12 pounds. Cultures were made from the clear filtrates for control. The filtrates were then carried to Deer Island, where about 0.5 c.c. was introduced into the anterior nares of each of the volunteers, five receiving the filtrate from one case and four from the other. Three and one-half hours had elapsed from the time of obtaining the nasal washings to the time of the nasal instillation. The control cultures were negative for bacterial growth, and none of the nine volunteers have shown symptoms of the influenza during ten days of isolation.

These men of the U. S. Navy are especially to be commended for their fine spirit in being willing to take chances of serious sickness for the sake of advancement of knowledge of the disease. The nature of the experiment and the possibility of serious consequences were fully explained to them. Their names are: J. E. Kiley, F. J. Hogan, F. B. O'Neill, P. G. Woods, L. C. Berg, H. L. Robertson, T. E. Null, T. A. Walker and H. A. Maronowitz.

In the other portion of the work thanks are due Dr. J. M. Brister, Dr. M. J. Rosenau, Dr. E. W. Goodpasture, Dr. William R. Redden, Dr. F. L. Burnett and Dr. F. N. Rapoport of the U. S. Naval Hospital, Chelsea, Mass., medical staff, for their assistance in examination and report of the cases.

SUMMARY

A rapidly spreading pandemic disease was first recognized at the U. S. Naval Hospital, Chelsea, Mass., Aug. 28, 1918, the first patients coming from the receiving ship at Commonwealth Pier, Boston. It has been carried to this port from Europe, both by patients and by carriers. It promises to spread rapidly over the entire country, attacking between 30 and 40 per cent. of the population, and running an acute course of from four to six weeks in each community.

This disease is characteristic of the ordinary endemic influenza, but is more severe and much more contagious. It is caused by a specific virulent strain of the influenza bacillus, against which individuals of the younger generation have relatively no immunity.

In from 5 to 10 per cent. of the persons afflicted, it develops into a massive and very fatal bronchopneumonia. This pneumonia is primarily caused by the influenza bacillus, this micro-organism being recovered from 82.6 per cent. of the lungs at necropsy, in 31.6 per cent. of which it is found in pure culture. The pneumonia is frequently complicated by pneumococcus or streptococcus infection.

The disease is characteristic of a sudden and severe toxemia, the influenza not being in the blood at any stage. It is not due to a filtrable virus. This was determined by introduction of the filtrate of nasal and throat washings from two typical cases into the anterior nares of nine volunteers, with negative results.

U. S. Naval Hopital.

Administering the Birth Registration Law.—Administrative history seems to indicate that it is easier to enforce a law on a new subject than it is on one that radically changes existing practices. It is this latter condition that has met most officers in the effort to enforce model birth registration laws. With the enactment of a model registration law in Kansas in 1911 it was found that it was not only necessary to put into active operation the new law, but to break up the old habits of reporting and not reporting.—W. J. V. Deacon, M.D., State Registrar.

INFLUENZA AT NAVY BASE HOSPITAL IN FRANCE*

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The present epidemic of a disease which in its clinical aspects resembles influenza is the most extensive of its kind since the great pandemic of 1889-1890. For several months frequent references have been made in foreign newspapers and medical journals to the prevalence of this epidemic in Spain, France, Switzerland, Germany, Great Britain and Ireland. On the western front both armies seem to have been sufferers. As an example of its military importance, 1,439 cases occurred in a military camp within three weeks,[1] and this appears to have been no very unusual record.

Concerning the infectious cause of the present influenza epidemic there is no unanimity of opinion. The Pfeiffer influenza bacillus has been isolated from a varying proportion of patients; but many observers have failed to find this organism with any regularity.[2] It is quite possible, indeed, that this organism is not responsible either for the present epidemic or for the pandemic of 1889-1890. On account of this uncertainty as to the etiology of influenza, the diagnosis must for the present be based mainly on its clinical and epidemiologic characteristics.

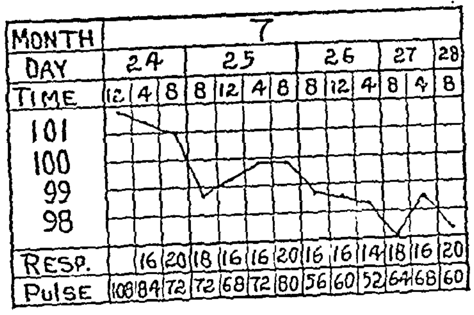

Fig. 1.—Temperature chart of a mild case of influenza.

GENERAL FEATURES OF THE LOCAL OUTBREAK

Before influenza assumed epidemic proportions in this hospital, a number of patients had been admitted who were suffering from complications and sequelae of the disease. No special effort was made to isolate these patients. Occasional cases have developed from time to time in the hospital wards, but at no time has the disease spread to any great number of ward patients.

One of the earlier definite cases among the hospital personnel was that of an officer who had recently returned to the hospital from a city where influenza was prevalent. Following his illness the disease appeared in slow succession among a small number of officers, nurses and enlisted men. It is doubtful, however, if these cases, which were more or less isolated, would have attracted much attention had there not been an epidemic elsewhere or had they not been followed by an explosive outbreak among the hospital personnel.

July 16, 1918, nineteen Hindus, who were from a single vessel and who had just become ill with influenza, were admitted to the hospital. Up to this date very few of our enlisted men had suffered from influenza. On the same day that the Hindus were received, however, two members of the hospital corps became ill. Since an epidemic among the enlisted personnel had been anticipated for some time and since it now seemed imminent, an order was issued by the officer in command that all enlisted men suffering from influenza should enter the hospital as patients. For two and a half weeks the disease spread rapidly through the personnel. The number of enlisted men who were admitted to the hospital during this time was: July 16, two; July 17, one; July 18, three; July 19, one; July 20, two; July 21, four; July 22, seven; July 23, nine; July 24, five; July 25, two; July 26, four; July 27, none; July 28, six; July 29, four; July 30, three; July 31, none; August 1, two; thereafter up to August 20, none. In eighteen days, therefore, fifty-five members of the enlisted personnel suffering from influenza were admitted as patients to the hospital. Including five who had the disease shortly before, the morbidity among the enlisted men was 37 per cent. During these eighteen days, nineteen nurses contracted the disease. These, together with four who had had it shortly before, made a morbidity of 40 per cent. among the nursing staff. Finally, of twenty-nine officers, fifteen had influenza during the epidemic. Of the total personnel at the hospital, 41 per cent. were known to have contracted the disease, and the vast majority of these became ill between July 16 and August 2, inclusive. After August 2 there were no new cases among the enlisted men, one doubtful case among the nurses and one reinfection among the officers. The epidemic had ceased, apparently because all those susceptible to the infection had acquired it.

It is certain that influenza existed in the hospital prior to the admission of the Hindus, and for this reason the epidemic cannot be definitely attributed to their admission. Nevertheless the presence of these patients probably accelerated the spread of the infection, for many of them had a marked bronchitis and it was several days before they could be taught to use sputum cups. Furthermore, an unusual proportion of cases developed shortly after their admission among those nurses and corpsmen who were attached to the ward that contained the Hindus.

Second attacks of influenza in the same individual seemed to occur in six or seven instances. The second attack usually followed several weeks after the first. Since the diagnosis was based solely on clinical findings, and since these do not differ in any characteristic manner from a number of other mild infections, it is not possible to be certain that the two attacks were always due to the same infection. However, we gained the impression that in some instances at least the immunity left by the first attack of influenza did not protect from a second attack of the disease a few weeks later.

CLINICAL CHARACTERISTICS

The subjoined summary of the clinical manifestations of influenza in this small epidemic is based on the records of the nineteen Hindus and the fifty-five members of the enlisted personnel, all of whom had been admitted to the hospital wards. As the disease was more serious among the Hindu patients, a distinction between these and the enlisted men will occasionally be necessary.

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* From the Medical Service of U. S. Navy Base Hospital No. 2.

[1] Averill, C.; Young, C. G., and Griffiths, J.: The Influenza Epidemic in a Camp, Brit. Med. Jour., 1918, **2**, 111.

[2] Bacteriology of the Influenza Pandemic, Brit. Med. Jour., 1918, **2**, 139. Matthews, J.: Preparing Medium for the Culture of the Pfeiffer Influenza Bacillus, Lancet, *London*, 1918, **2**, 104. Dr. G. D. Barnett made several unsuccessful attempts to demonstrate influenza bacilli in the sputum and nasapharyngeal smears from our patients.

The onset was at times sudden; at other times it was gradual and the patient remained at work for one or more days before he reported ill. The initial symptoms were in most instances headache, backache, malaise, chilliness and pains in the extremities. Several complained of pains in and above the eyeballs. A few of the enlisted men and a considerable number of the Hindus complained of abdominal pain during the first day or two of the disease. Irritation of the upper respiratory tract occurred in about two thirds of the patients. This usually consisted of a dry, hacking cough or of soreness of the throat. Less commonly there was hoarseness, a sense of rawness beneath the sternum, or a cough productive of sputum. The last was the rule among the Hindus.

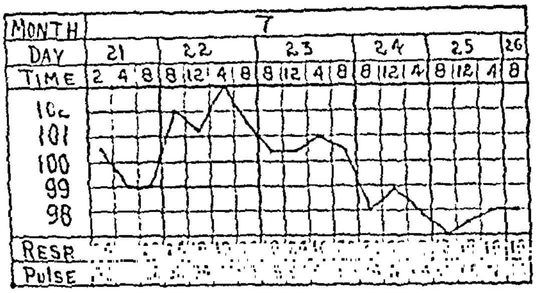

Fig. 2.—Temperature chart of a case of influenza in which the main rise of temperature occurred on the second day in the hospital.

Examination at the onset showed in most instances some reddening of the pharynx, which commonly involved the anterior pillars. The tonsils were rarely swollen, and the glands at the angle of the jaw were not palpable. When the cough was productive, bronchial râles could be heard over the lungs; but otherwise the respiratory sounds were normal. There was no enlargement of the spleen, no swelling of the lymph glands and no abdominal tenderness or rigidity.

Mental dulness and apathy were common, and in some instances the patient was continuously drowsy and slept most of the first forty-eight hours of his illness. In other instances, the headache, backache or pains in the extremities, together with a general irritability, made the days uncomfortable and the nights restless.

Nearly all patients showed considerable fever. Among the Hindus all but one showed a maximum temperature of 103 or over. Among the enlisted men the average temperature was 102, but it varied from a few whose temperature hardly exceeded the normal to one whose maximum was 105.6. In several patients who developed the disease in the hospital wards, the temperature rose abruptly; but it may also rise gradually. In thirty enlisted men the temperature was highest on the day of admission to the hospital, in seventeen it was highest on the second day, while in one it was highest on the third day. In uncomplicated cases the fever lasted from one to six days, with an average duration of about three days. The fall was usually by lysis. When the fever lasted more than six days in our patients, bronchitis or bronchopneumonia was present. Representative temperature charts are reproduced herewith.

The pulse rate was accelerated but usually not in proportion to the rise of temperature. For example, the temperature of 105.6 was accompanied by a pulse rate of 104, while pulse rates below 100 with temperatures above 103 were common. Among the Hindus, the pulse rates were somewhat more rapid than among the enlisted men; but they were still slow relative to the temperatures. When serious pulmonary complications were present, the pulse became rapid. It seemed to us that the pulse furnished a better indication of the severity of the infection than did the temperature.

Leukocyte counts made at the onset in seven uncomplicated cases showed from 5,000 to 8,000 to the cubic millimeter. In three Hindus who subsequently developed bronchopneumonia the counts were 8,600, 9,200 and 10,000. Faint traces of albumin were found in thirty of forty urines examined during the early stages of the disease. In two others there was a heavy cloud of albumin. Casts were found in eight urines. Later examinations in a number of these cases showed a normal urine after subsidence of the infection.

Convalescence was commonly marked by an unusual degree of prostration and by unusual exhaustion on slight exertion. These symptoms usually passed off in from three to five days after the temperature had become normal, but in a few instances they lasted a week or more.

The only serious complication among these patients was bronchopneumonia. This was suspected in two or three of the hospital personnel. It was definitely diagnosed in four of the nineteen Hindus, the diagnosis being based on the considerable number and persistence of râles, the protracted fever, the rapid pulse rate and the serious character of the illness. In only one of these patients were the usual signs of consolidation demonstrable. Of these four patients, two died. These were the only deaths in this local epidemic.

We have had the opportunity to observe the complications and sequelae of influenza in a considerable number of patients who have been sent to the hospital. Without going into detail, it may be said that the most common sequelae observed were infections of the lungs and pleurae, particularly fibrinous and serofibrinous pleurisy, empyema, persistent bronchitis and bronchopneumonia. Prostration and continued cough have frequently given rise to a suspicion of pulmonary tuberculosis. Less common have been cardiac disturbances which were characterized by breathlessness, palpitation, precordial pain and rapid pulse. In a number of patients the symptoms have been those of neurasthenia or less commonly of a marked and persistent general asthenia.

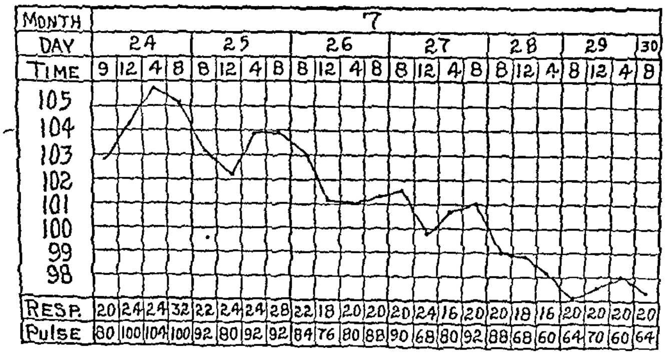

Fig 3.—Temperature chart of a severe but uncomplicated case of influenza.

The treatment used was expectant and symptomatic. With the onset of fever the patient was sent to bed and was kept there until the temperature had been normal for at least forty-eight hours. If pains in the head, back and extremities were troublesome, acetylsalicylic acid was given in doses of 15 grains every three hours until six doses had been taken. If the patient could not sleep, 5 grains of barbital were given at bedtime. Oily sprays lessened the irritation in the upper air passages. By these means the early discomforts were diminished. Since the chief danger of the infection arises from complications and sequelae, care to avoid these should be taken. The spread of bronchopneumonia is probably increased when many patients are treated in confined quarters. Under such circumstances special precautions should be taken against contact and droplet infection. On account of the danger of cardiac and neurasthenic sequelae, convalescence should be prolonged until the patient can carry on his usual duties without fatigue.

CONCLUSIONS

The present widespread epidemic of influenza is comparable to that which swept over the world in 1889-1890. The percentage mortality is very low, but the total mortality is probably considerable on account of the high morbidity. Under unfavorable conditions of lessened individual resistance and overcrowding, the percentage mortality may also be high. For example, a ship's surgeon informed us that of fifty Hindus who contracted the disease, he lost fifteen with pulmonary complications.

The clinical features of this disease, together with its rapid spread to a large number of individuals, give it a definite character. The clinical features alone do not suffice to mark it off clearly from the sporadic cases of "influenza" that occur from time to time in every community. If the disease continues to spread in a manner comparable to that of 1889-1890, an opportunity to study its etiology will be given to bacteriologists in the United States.

Training the Disabled in Great Britain and Ireland.—According to the *Vocational Summary*, published by the Federal Board for Vocational Education, the British ministry of pensions publishes each month a list of training courses for the reeducation of disabled soldiers in the United Kingdom. Training courses have been provided in many different lines, and in many different communities. The courses are given by public and private schools, colleges and institutes in every section of the country, as well as in factories and workshops. The list of courses for May, 1918, printed in the *Summary* shows a list of subjects of the greatest variety taught in many communities. This plan is of interest to the people of the United States who are preparing a national scheme of reeducation under the Smith-Sears Act for vocational training.

LABORATORY AS AID IN CONTAGIOUS DISEASE ADMISSIONS IN CANTONMENT HOSPITALS

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Early last winter it was found at Camp Grant that the receiving officer, who admitted all patients, could not give time for the necessary examination of contagious cases, and measles and scarlet fever patients were occasionally put into clean wards, tying up these wards for long periods of time with quarantine regulations. For this reason the contagious disease department took over the admission of all contagious cases.

TABLE 1.—AVERAGE WHITE COUNT ON ADMISSION

Diseases	Number of Cases	Average White Count
Measles	346	7,539
German measles	19	9,777
Mumps	488	9,415
Scarlet fever	91	18,926
Streptococcus sore throat	33	17,484
Whooping cough	3	20,433

All patients were stripped to the waist and examined. In the definite cases, patients were sent to the proper wards, and in doubtful cases to the observation wards. Difficulty soon developed in properly grouping the following types of cases: (1) infections in the incubation period of a second infection; (2) double infections, in which, for instance, a measles eruption masked a scarlet fever efflorescence; (3) cases that were apparently one infection but in reality were another. It was found that the leukocyte count taken after admission to the ward readily differentiated most of these cases.

The suggestion was therefore made that the white blood count for the differentiation between these diseases be made in the receiving office. In this way a large majority of these patients could be sent directly to the proper ward without an intermediate delay of a day or two in the observation wards. With this idea in mind a unit laboratory was placed in the receiving office, and a leukocyte count was made in all doubtful cases. A larger number of cases proved to be doubtful than was at first apparent, so that it became expedient to make counts in all cases. Before this procedure was instituted, the error made in making the immediate diagnosis was about 5 per cent. of all cases; the white count reduced this error to

TABLE 2.—WORK DONE BY THE RECEIVING OFFICE UNIT LABORATORY AT CAMP GRANT, 1918

	Week Ending																													
	January				February				March					April				May				June					July			
	6	13	20	27	3	10	17	24	3	10	17	24	31	7	14	21	28	5	12	19	26	2	9	16	23	30	7	14	21	28
Blood counts:																														
White	45	88	159	86	127	113	126	93	116	154	168	134	127	145	112	123	130	146	123	67	51	63	50	37	43	71	48	55	59	56
Red	..	..	..	..	..	..	..	..	1																					
Differential	7	20	12	12	2	12	21	11	34	27	17	28	9	12	9	14	21	43	36	2	1	2	3	1	1	..	6	..	1	
Urinalysis	50	67	46	46	34	27	43	28	24	48	37	23	40	80	36	33	59	35	25	..	..	3	..	..	..	6	..	4	4	1
Throat smears	6	3	18	10	23	30	47	13	28	25	36	31	18	18	18	19	15	14	4	7	5	..	..	..	..	6	2	..	8	3
Throat cultures	..	..	..	7	27	31	41	26	45	46	37	37	43	70	55	27	68	75	96	14	38	12	17	7	126	10	33	13	9	8
Urethral smears	2	..	..	1	..	..	2	..	..	..	..	..	2	2	1															
Spinal fluids	..	..	..	6	15	6	2	2	..	6	10	13	11	3	2	..	2	2	1	2	3	2								
Sputum	1	1	4	..	..	..	1	..	..	..	2	1	2	10	4	..	1	3	..	..	..	..	..	..	1					
Feces	..	..	..	..	..	..	..	3	3	..	1	2	..	..	..	1	2	4	3											
Schick test	..	..	..	..	..	..	..	..	..	..	12	4	1	2	3	..	..	21	14	34	6	15								
Wassermann tests	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	126	237	217	253	372	314
Hemolytic streptococcus cultures	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	47					
Men at work	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2

approximately 1 per cent. It also increased the number of cases in which an immediate diagnosis could be made. This cut down the number of patients that it was necessary to send to the observation wards.

In the laboratory of the receiving office, cultures and cover glass smears are made from all sore throats to determine the presence of the diphtheria bacilli. In all cases of sore throat with exudates that show organisms resembling the diphtheria bacilli in the smears, the patients are immediately given antitoxin. The administration of antitoxin in other cases can usually await the examination of cultures. Because of the known susceptibility of scarlet fever patients to diphtheria, it is important that no throats harboring the diphtheria bacilli should be allowed to remain in the scarlet fever ward; and to avoid such cross-infection, in all scarlet fever cases smears are taken and cultures made in the receiving office. A Schick test should be made in all cases of sore throat, and it is often a valuable aid in differentiating between a true diphtheria and a diphtheria carrier. This is especially true when a streptococcus exudate clouds the picture.

This laboratory has also proved to be a convenient place for obtaining the blood for routine Wassermann tests, and recently has been of value in obtaining a series of throat cultures to determine the frequency of the hemolytic streptococcus.

Table 1 shows the average white counts in the various diseases on admission. It contains both uncomplicated and complicated cases with the exception that unquestionable cases of double infection were omitted. Many cases of measles and some cases of mumps were complicated by the hemolytic streptococcus, which elevated the white count. Therefore these diseases will show a higher average than a series of uncomplicated cases. The table is considered of value, however, because it shows the figures the receiving officer actually has to consider in making his disposition of cases.

Out of 476 cases of measles, 66 per cent. showed Koplik's spots on admission, which was usually on the first day of eruption.

These examinations led to the following general conclusions:

Measles patients with counts of more than 10,000 and mumps patients with counts over 12,000 had a complication that demanded a careful diagnosis before they were sent to the wards. In a small series of nineteen cases, German measles averaged a higher count than true measles. Many mumps patients have a leukopenia of from 5,000 to 7,000. An orchitis elevates the white count in this disease by an increase of the mononuclear cells. There was little difference in the white counts in streptococcus sore throat and scarlet fever, although scarlet fever averaged slightly higher.

It might be objected that these laboratory tests would undesirably lengthen the process of getting the patient to bed. Practically this did not occur. If it did occur, it could easily be remedied by putting more workers in the laboratory. Installation of small cubicles will maintain the technic of the masking system, while the patient is unmasked for throat cultures, etc. These cubicles should be made of wood and sheet metal and covered with white enameled paint, so that they can be frequently disinfected with soap and water.

Table 2 shows the amount of work done by this unit laboratory at Camp Grant.

New and Nonofficial Remedies

The following additional articles have been accepted as conforming to the rules of the Council on Pharmacy and Chemistry of the American Medical Association for admission to New and Nonofficial Remedies. A copy of the rules on which the Council bases its action will be sent on application. W. A. Puckner, Secretary.

CHLORCOSANE.—A liquid, chlorinated paraffin containing its chlorine in stable (non-active) combination.

Actions, Uses, Dosage, Physical and Chemical Properties.—See The Journal, Feb. 16, 1918, p. 459.

Chlorcosane-Squibb.—A brand of chlorcosane.

Manufactured by E. R. Squibb & Sons, New York. No U. S. patent or trademark.

THROMBOPLASTIN SOLUTION-ARMOUR.—An extract of cattle brain in physiological sodium chloride solution prepared according to the method of Hess. It complies with the description of Solution Brain Extract (New and Nonofficial Remedies, 1918, p. 138).

Action and Uses.—See general article, Fibrin Ferments and Thromboplastic Substances (Kephalin) (New and Nonofficial Remedies, 1918, p. 136).

Dosage.—See Solution Brain Extract (New and Nonofficial Remedies, 1918, p. 138). Thromboplastin solution-Armour is marketed in 25 Cc. vials which bear an expiration date, after which time the contents should not be used.

Manufactured by Armour & Co., Chicago. No U. S. patent or trademark.

One part thromboplastin solution-Armour will coagulate 100 parts of oxalated blood plasma in less than one minute when tested as follows:

To 0.5 Cc. thromboplastin solution-Armour is added 24.5 Cc. physiological sodium chloric solution and the mixture shaken until a uniform emulsion results. Of this suspension 5 Cc. is mixed in a graduated cylinder with an equal volume of blood serum. To this is added 10 Cc. of oxalated blood plasma (1 Gm. sodium oxalate in 100 Cc. of water, added to 900 Cc. of fresh blood) and mixed by inverting the cylinder twice. The mixture is rapidly transferred to a shallow dish; it should coagulate in less than one minute. For this test, all solutions must be made freshly and the temperature of the liquids maintained at 38 C.

DESICCATED CORPUS LUTEUM-ARMOUR (See N. N. R., 1918, p. 237).

The following dosage form has been accepted:

Corpus Luteum Capsules, 2 Grains.—Each capsule contains desiccated corpus luteum-Armour 2 grains.

SALIPYRINE (See N. N. R., 1918, p. 275).

The following dosage form has been accepted:

Salipyrine Tablets, 7½ Grains.—Each tablet contains salipyrine 7½ grains.

ANTIPNEUMOCOCCUS SERUM (See The Journal, June 1, 1918, p. 1599).

The Gilliland Laboratories, Ambler, Pa.

Antipneumococcic Serum, Type I.—Marketed in vials containing 50 c.c.

PHENYLCINCHONINIC ACID, U. S. P. (See N. N. R., 1918, p. 269).

Phenylcinchoninic Acid-Abbott.—A brand of phenylcinchoninic acid, U. S. P.

Manufactured by the Abbott Laboratories, Chicago, under U. S. patent No. 1,075,171 (Oct. 7, 1914; expires 1930) by license of the U. S. Federal Trade Commission.

PARRESINE (See N. N. R., 1918, p. 247).

The following dosage form has been accepted:

Parresined Lace-Mesh Surgical Dressing.—Net mesh gauze impregnated with and containing from 45 to 50 per cent. of parresine.

HALAZONE (See N. N. R., 1918, p. 159).

Halazone-Squibb.—A brand of halazone. Sold only in the form of tablets (see below).

Halazone-Squibb Tablets, 1/16 Grain.—Each tablet contains halazone-Squibb 1/16 gr., anhydrous sodium carbonate 1/16 grain and sodium chloride 1⅝ grains.

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SATURDAY, SEPTEMBER 28, 1918

THE DAILY PRESS AND THE "FUTILITIES OF CONTEMPORARY SCIENCE"

The American public has so long been accustomed to accept the daily press as its mentor in all things which concern human welfare that the pronouncements of its printed columns are sometimes given an undeserved consideration. However sound and enlightening the almost infinite variety of items published in the newspapers may be as a rule, however convincing and worthy the editorial notices may appear when they analyze the current problems of politics, economics, finance or literature, it not infrequently happens that the reputation of science suffers. Our great metropolitan dailies attempt to secure experts in the domain of so-called "humanistic" studies to guide them in public expression of policies or achievements. All too often science is treated as something apart from the worthier interests of the thinking public; and as a consequence the presentation of scientific achievement often occurs in a crude way that makes errors of statement glaring to the intelligent, or else degrades reports of scientific progress by the employment of ignorant facetiousness.

An illustration of the editorial preaching of reckless misinformation regarding the development of typhoid germs in horses and the consequent alleged danger of eating horse meat—a statement emanating from Hearst papers under the editorship of Arthur Brisbane—was referred to recently in The Journal.[1] Under the caption "Futilities of Contemporary Science," a newspaper of no less dignity than the New York *Times*[2] attempts to exploit in semijocular vein the press dispatches regarding investigations of Hindhede of Copenhagen on restricted diets. This student of nutrition, who has long advocated economy in diet and particularly in the use of animal protein, has lately shown that adults could live without apparent detriment for a period of more than one and one-half years on a ration of bread, potato, vegetables and fruits without added fats. Such experiments, among many others that might be cited, help to rob the vision of meatless days and beefless weeks of the terror which it inspires in the breasts of the uninitiated. Man's health and strength are not dependent on the assumed superior virtues of animal flesh as a dietary constituent.

Every physician with scientific training is aware of the uncertainty existing with respect to the precise rôle of fat in the economy. Aside from the fact that fats yield more than twice as much energy per unit of substance as other foodstuffs, the demonstration that animal fats often act as carriers of vitamins essential to physiologic welfare has begun to raise new questions as to the indispensability of this group of nutrients. In the current discussions of war edema, the xerophthalmia of babies fed on fat-free milk and cereals, and other diseases of dietary deficiency origin, the possible need of fats as such or what they may include has become prominent.[3] It has been repeatedly reported by competent observers that the low fat ration in Germany, at least in the earlier period of the war, was regarded as one of the most severe deprivations of the population.

Surely, then, reputable investigations of nutrition successfully accomplished in spite of a dearth of fats are likely to command attention in the scientific world. The presumable potency of potato protein, the possible occurrence of adequate vitamins in the green vegetables —these and other timely topics are involved in Hindhede's announcement in his Danish report, of which a brief summary has been transmitted by cable. Yet the New York *Times*, evidently ignorant of the real significance of its "news," indulges in the following supposedly humorous animadversion:

> How painful, then, it is to read that a distinguished Scandinavian, Dr. Hindhede, has established the fact that man can get fat without eating fats! Those misguided individuals who want to know how to get fat are few, and material for the gratification of their strange desire is ready to the hand of most of them. That men could continue to live, work, think, and maintain at least a minimum of health with very little fat in their diet was already established, for in vast regions of half-fed Europe they have been doing that for months and years past; no Scandinavian researches were needed to establish that.
>
> If Dr. Hindhede and his colleagues among neutral scientists wish to devise something that will bring real solace to the world after the war is over, let them devise some diet on which anybody can get thin. The mere verification of suspicion that whatever you eat or do not eat you will still have to let out your belt, may prevent some needlessly painful dietetic penances, but it does nothing to alleviate the agonies of the adipose.

Where ignorance is bliss 'tis folly to be wise. But it is worse than folly to allow ignorance to concoct belittling facetiousness at the expense of the efforts of modern science—particularly in a day when science admittedly needs to be encouraged to its utmost.

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1. The Intermediate Host of the Typhoid Bacillus, Current Comment, The Journal A. M. A., July 27, 1918, p. 284.
2. Futilities of Contemporary Science, Editorial, New York Times, July 29, 1918.
3. Steenbock, H.: Vitamins and Nutrition, The Scientific Monthly, August, 1918, 7, 179.

ARE ANTITOXINS PROTEIN IN NATURE?

Ehrlich's hypothesis that an antitoxin consists of "cell receptors" that have been produced in excess and secreted by body cells into the blood has doubtless been a helpful conception stimulating pathologists or immunologists—as the specialists are now designated—in the investigation of immune serums. To the chemically trained mind, however, it falls far short of suggesting something definite or tangible and in any way comparable with the more familiar compounds that are known to play some part in biologic processes. The fact that the neutralization or detoxication of toxin with antitoxin can be carried out quantitatively in a beaker as well as in the body is an indication that specific substances are involved in such reactions. According to Arrhenius, the interaction of toxin and antitoxin is accompanied by a liberation of heat much as is the action between strong acids and bases.[1] The concurrence of opinion further opposes the idea that antitoxins are in the nature of chemical ferments or enzymes.

Although the actual chemical nature of antitoxins is unknown, the antitoxic properties of such immune serums as are employed in combating diphtheria are closely associated with the globulin fraction obtainable from this part of the blood by current methods of protein separation and purification. There is some evidence, derived from data regarding their comparative diffusibility, to indicate that antitoxin molecules are much larger than the toxin molecule;[2] and this fact, along with the deportment of antitoxin in the attempts to concentrate it from serums, is often adduced in favor of its protein nature. Although it is possible to retain all of the immunity units along with only a part of the protein, no one has succeeded in separating the antitoxins from their associated proteins.

At the Bureau of Animal Industry in Washington, Berg and Kelser[3] have attempted anew to secure a protein-free antitoxin preparation on the one hand, and on the other to determine whether antitoxin can be destroyed by procedures that leave the protein intact. Success in either direction would indicate that antitoxin may be of nonprotein nature. According to the method proposed by the government pathologic chemists, if an antitoxin—tetanus antitoxin, for example—is a substance of nonprotein nature, it should be possible to prepare artificial digestion mixtures containing the antitoxin serum or antitoxin derived therefrom, in such fashion that the protein would undergo digestion without loss of antitoxin. Appropriate chemical measurements would indicate the extent of proteolysis, while inoculation experiments on guinea-pigs would indicate whether there was any loss of antitoxic units. If, on the other hand, the antitoxin is a protein and its power to neutralize immunologically the corresponding toxin is a function of the intact protein molecule, then the antitoxin would be destroyed in every case in which the protein had undergone cleavage, regardless of whether the cleavage was caused by a proteolytic enzyme or other chemical agent. Due regard must of course be had for the possible destruction of the toxin by the chemical agents used in the experiments.

The outcome of the experiments of Berg and Kelser has been to indicate that antitoxin destruction may take place with or without cleavage of protein. Dilute acid or alkali may destroy the antitoxin within a period in which significant chemical changes in the accompanying protein cannot be detected by the tests adopted. The authors interpret their results as indicating that tetanus antitoxin is a substance of nonprotein nature. But, they add, the stability of the antitoxin is so dependent on that of the protein to which it is attached that whenever the protein molecule is split, the antitoxin splits with it. It would be folly, however, to regard these demonstrations as conclusive so long as a protein-free antitoxin is not obtained. Proteins are susceptible to molecular rearrangement by the action of an alkali, for example, without having their gross composition altered thereby. The antigenic properties of proteins can be entirely altered in this way, as Ten Broeck[4] found in the case of the racemized protein of Dakin, which still seems to possess all of the amino-acids present in the original active substance.

THE UROBILIN PROBLEM

It is nearly half a century since urobilin was described by Jaffe. Little attention was paid to this substance from a clinical standpoint until its relation to the decomposition of bile pigment by bacterial action in the alimentary canal was made prominent by Friedrich Müller. The terms "urobilin" and "urobilinogen" are applied to a group of derivatives of bile or blood pigment for which methods of estimation, crude though they may appear to careful analysts, have been devised and widely applied to the examination of urine and feces by a considerable number of clinicians and in a great diversity of cases. Like many novelties in clinical chemistry—we may cite the indican test and Ehrlich's diazoreaction—the test for urobilin has attained a considerable popularity and has been the subject of generalizations that might appear highly significant and diagnostic to the uncritical reviewer. It seems worth while, therefore, to point out at this time that there are unquestionably obstacles to the ready acceptance of some of the current hypotheses.

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[1] Arrhenius, S. A.: Quantitative Laws in Biological Chemistry, 1915.

[2] The literature on this topic is reviewed by Wells, H. G.: Chemical Pathology, Ed. 3, Philadelphia, 1918, p. 180.

[3] Berg, W. N., and Kelser, R. A.: The Destruction of Tetanus Antitoxin by Chemical Agents. Proc. Nat. Acad. Sc., 1918, 4, 174.

[4] Ten Broeck: Jour. Biol. Chem., 1914, 17, 369.

The recent theory that is perhaps the most prominent has been thus summarized by Robertson:[1] Urobilin is a decomposition product of bile, formed chiefly in the intestine by the action of putrefactive bacteria on the bile pigments. The quantity of urobilin in the feces does not represent the total amount of bile excreted into the intestine, for part of the urobilin is reabsorbed in the form of urobilinogen. Yet there seems to be a fairly constant relationship between the two, and the urobilin output may be taken as a rough measure of bile excretion. Since the amount of bile formed is, with a normal liver, directly dependent on the quantity of blood pigment brought to it, the variations in urobilin excretion may therefore be considered to indicate corresponding fluctuations in the amount of blood being destroyed. Robertson observed, in his clinical studies at the Massachusetts General Hospital, that those patients in whom the evidence of blood destruction was most marked gave the highest urobilin estimations. There was no case with a normal urobilin output which showed any evidence of abnormal hemolytic activity. Accordingly it seemed fair to conclude, first, that the quantity of urobilin in the stool may be taken as an approximate measure of the degree of hemolysis occurring in the body; and secondly, that such estimation is of very definite clinical value in the diagnosis of conditions questionably hemolytic in character, particularly in anemias that are of uncertain type.

These conclusions were in harmony with the views of Wilbur and Addis[2] of Leland Stanford Junior University, who have devoted much attention to the clinical significance of urobilin. They even state that by means of urobilin estimations in the stools, those forms of anemia associated with an increased blood destruction may be differentiated. They intimate that it is probably in this field that the most valuable diagnostic results will be obtained; and they point out the striking contrast which was found between the very large total urobilin elimination in pernicious anemia as compared with the small amount observed in secondary anemias following hemorrhage or carcinoma.

At the Mayo Clinic, Giffin, Sanford and Szlapka[3] have altered the technic by making observations on contents of the duodenum collected by means of an Einhorn tube rather than on stool extracts. As a result they report low values in secondary anemias, but high figures in cases of hemolytic jaundice and of pernicious anemia—the classic instances. The Rochester clinicians do not attempt any far reaching deductions, however, as to the interpretation of their findings.

What is to become of the enterogenous hypothesis of urobilin formation in the light of such clinical observations? Must it be abandoned? There is evidence that the urobilin substances may make their appearance in the urine independently of any presumable putrefactive origin in the bowel. Shall we then relate urobilin to some antecedent reaction associated with bile pigment formation, for example, to the failure of a proper bile pigment synthesis or to a disintegration of bilirubin in the liver or elsewhere? In this event it becomes necessary—if the original contentions of an interrelation between blood pigment destruction and urobilin formations are maintained—to postulate a direct relationship between hemoglobin and bile pigments. Such a hypothesis has found a serious obstacle in the researches of Whipple and Hooper[4] of the Hooper Foundation at the University of California. Their conclusions, termed "iconoclastic" by one recent writer[3] on urobilin, indicate that bile pigment production is influenced by dietary factors quite as well as by the blood factors. Thus, although the introduction of free hemoglobin into the circulation may be followed by an increased output of bile pigment, this is not an invariable and uniform response. In other words, the disintegration of blood pigment may not be the decisive factor in the production of bile pigments or their derivatives. It may turn out that urobilin is the expression of some impaired organ function as well as of blood destruction. Amid the uncertainty and confusion that have arisen, the clinician may well hesitate to take a decisive attitude toward the pigment problems.

SEED OILS AS NUTRIENTS

When we were warned, early in the war, that an impending shortage of fats—a deficit due to lack of tonnage and the extensive use of fats in the manufacture of munitions, as well as to decreased animal production—called for intelligent conservation of these foodstuffs, there was some uneasiness as to the outcome. It had early been heard as a prominent complaint against war time diets in Germany, in which the fats were said to be very low, that they do not "stay by" and consequently they put the consumer in the position of a dietetically unsatisfied individual. With a possible decrease in the procurability of butter, lard, suet and tallow impending, the vision of a perennially hungry public began to worry the food experts. But necessity is the mother of invention; consequently new sources of fats have come to notice and hitherto little used fats have gained a novel prominence. There are many wholesome and relatively inexpensive vegetable oils on the market which might be used more freely than they now are. Moreover, the U. S. Food Administration[1] assures us that the production of vegetable oils can be more easily and quickly increased in an emergency than the production of the animal fats.

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[1] Robertson, O. H.: Urobilin in the Stool—An Index to Blood Destruction, Arch. Int. Med., June, 1915, p. 1072.

[2] Wilbur, R. L., and Addis, Thomas: Urobilin: Its Clinical Significance, Arch. Int. Med., February, 1914, p. 235. Addis, Thomas: A Working Hypothesis of Hemoglobin Pigment Metabolism, ibid., March, 1915, p. 413.

[3] Giffin, H. Z.; Sanford, A. H., and Szlapka, T. L.: The Estimation of Urobilin and Urobilinogen in the Duodenal Contents, Am. Jour. Med. Sc., 1918, **155**, 562.

[4] Hooper, C. W., and Whipple, G. H.: Bile Pigment Metabolism, I, Bile Pigment Output and Diet Studies, Am. Jour. Physiol., 1916, **40**, 332. Whipple, G. H., and Hooper, C. W.: Bile Pigment Metabolism. II, Bile Pigment Output Influenced by *Diet*, *ibid.*, *p.* 349; III, Bile Pigment Output and Blood Feeding, ibid., 1917, **42**, 256. Hooper, C. W., and Whipple, G. H.: Bile Pigment Metabolism, IV, Influence of Fresh Bile Feeding upon Whole Bile and Bile Pigment Secretion, ibid., p. 264. Whipple, G. H., and Hooper, C. W.: Bile Pigment Metabolism, VI, Bile Pigment Output Influenced by the Eck Fistula, ibid., p. 544.

The physiologist insists on something more than attractive appearance and palatability as a guarantee of nutrient virtues in newly proposed foods. He insists nowadays on the rigorous test of digestibility, etc., which can be furnished only by actual feeding experiments. Hence the government, through the agency of its Office of Home Economics, has sought information of this sort regarding the edible fats. In addition to the edible animal fats, all of which are proverbially digested well when eaten in amounts not in excess of those consumed in the ordinary dietary, some of the better known vegetable fats, including olive, cottonseed, coconut, peanut and sesame oils, as well as those expressed from common nuts, have passed the test.[2] The latest contribution[3] to the possibilities of fat for food vouches for the excellent utilization of corn oil, a refined by-product of the manufacture of corn starch, which has been used quite extensively in the preparation of lard substitutes and is now becoming quite a common household product; soy bean oil, long a fuel in the Orient and now giving promise of possible usefulness as a food; sunflower seed oil, which the American Indians were wont to use for food purposes and which the human subjects in the government tests consumed in excess of 90 gm. daily without objection; Japanese mustard-seed oil, a by-product of the manufacture of mustard for condimental purposes; rape-seed oil, already familiar to inhabitants of Europe and India; and even charlock oil, the product of a weed seed (wild mustard).

If we can accept substitutive cereals, why not substitutive fats? It must not be overlooked, of course, that some animal fats, notably milk fats, contain little known but very important substances — vitamins — without which the body cannot grow or recover from injury as it should. As these are not found in all vegetable oils, we must not fail to provide children and invalids with some animal fats, preferably perhaps from milk. The fact that some fats are solid and some oily does not affect their comparative wholesomeness. It merely gives us the problem of using them in new ways when once their physiologic availability has been suitably guaranteed.

Current Comment

OUR ANIMAL HERDS

The drought of this summer in parts of the Allied countries and in our own Southwest and in some Western states forces on the world's attention the great dependence of the human race on its animal herds. The war has led to such depletion in the animal stocks of European countries that they can be saved only from the outside and are looking particularly to us for help. We should remember that the little cans of condensed milk have become almost sacred symbols of our aid to hundreds of thousands of Belgian and French mothers. Since under war conditions the maternal nursing period is only from six weeks to three months, the continued development of all the peoples directly hit by the war depends on their dairy herds—now sadly depleted by slaughtering for food and by German thieving. The embargo on feed grains to neutral countries, such as Holland, has forced the slaughtering of hundreds of thousands of cows. It takes at least three years for any considerable herd increase in milch animals, so at the best the problem will be a most serious one. A scarcity of the world's food supply for the coming year brings out an interesting contrast to that of the years 1917-1918, since now the Allied countries' shortage, as well as our own, is in fodder and feed grains rather than in bread grains. The effect of this on our own country is hard to foresee.

THE EPIDEMIC OF INFLUENZA

The epidemic of influenza now sweeping over the country—a part of the pandemic now covering the world — reported in this country first from seaports and naval stations, and later from many cities, including at least twenty-five Army camps, with the craze for weird nomenclature accompanying war conditions, has been labeled "Spanish influenza." This, however, should not cause any greater importance to be attached to it, nor arouse any greater fear, than would influenza without the new name. This epidemic is of course modified as to its epidemiology by the fact that large numbers of the most healthful portion of our population have been segregated in military and naval camps. The condition presumably started in Spain and spread throughout the various armies. It has already practically disappeared from the Allied troops. A typical epidemic as it existed abroad is described in the paper by Hewlett and Alberty in this issue of The Journal; a typical epidemic at a naval station is described also in this issue by Lieutenant Keegan. It is needless and too early to discuss here the exact identity of the infectious agent. Few physicians will attempt to treat the condition with any special reference to its bacteriologic cause. The course of the disease is similar to the condition which has always been called influenza, except that it seems in some cases more severe, that it shows an extraordinary degree of contagiousness and that it is complicated or followed, in perhaps as many as 5 per cent. of cases, by a massive and rather fatal bronchopneumonia. In its great prevalence it recalls the epizootic of earlier years. In the epidemic at Chelsea, Mass., this pneumonia was found to be caused by the influenza bacillus, which was recovered from 82.6 per cent. of the lungs at necropsy, and in 31.6 in pure culture, frequently mixed, however, with pneumococcus or streptococcus infections. This pneumonia was fatal in 33⅓ per cent. of the persons attacked by it. Early reports of the epidemic at the Great Lakes Naval Training Station indicate a similar incidence of pneumonia and mortality. Medical authorities of the Army, the Navy and the Public Health Service are thoroughly alive to the condition, and are taking active measures to control it. These measures are based on our knowledge that the disease is transmitted from person to person by direct contact, or indirect contact through droplet infection, and that it is therefore to be controlled by isolation and prevention of the transmission of these discharges. Because of the tendency to the development of the secondary bronchopneumonia, patients should be treated in well-ventilated, warm rooms with special consideration for the possibility of this serious complication.

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[1] The Day's Food in War and Peace, published by the U. S. Food Administration, Washington, 1918, p. 44.

[2] Bull. 310, U. S. Dept. Agr., 1915; 507, 1917; 505, 1917; 630, 1918.

[3] Holmes, A. D.: Digestibility of Some Seed Oils, Bull. 687, U. S. Dept. Agr., 1918.

"UNCLE SAM, M.D."

Under this title Samuel Hopkins Adams writes in *Collier's* for September 21. It is an article that every physician should read. Mr. Adams says: "The vast and complex job of making over our peace doctors into war doctors is the nearest thing to 100 per cent. achievement that the government has yet performed in this war"; and his article tells the story of this job and the way it is being done. Mr. Adams is not writing from hearsay; he went to one of the medical officers' training camps, and in order to go through the routine, as he puts it, "became part and parcel of a decidedly active, not to say overcrowded life." The company to which he was assigned was the "crack company of the best battalion"; the company said so! Mr. Adams thus sums up his impressions of the camp: "If I had to select the one quality which chiefly characterizes doc in uniform, I think I should name gameness. Fuse with his determination and enthusiasm a certain healthy humility, born of the necessity of learning things from the bottom up, a prevailing readiness to help the man a little newer than oneself, and a complete sense of democracy, and you get an esprit de corps such as one would not believe possible in an organization so new and so constantly renewing."

THE MILK PROBLEM

The most insoluble of all food problems are those associated with dairying. Local conditions are widely at variance as to the expense of production and the increase in milk production. Advances in the price of milk strike at our children's welfare and encounter greater opposition than advances in the price of any other commodity. The successful efforts of health officers and of physicians to improve the quality and increase the safety of milk have necessarily raised the cost. Dependable milk and butter are absolutely vital to child welfare. With the short supply of fodder in many places, the cutting off of brewers' grains, the shortage of labor and the many difficulties surrounding milk distribution, public interest in maintaining the dairy herds must be kept up. Only by so doing can we care for the present emergency and keep intact the large herd needed for the replenishment of Europe. The medical profession has for years been in the forefront in the protection of the public on the milk question, and its influence must be felt even more now in every community, in order that we may be able to have a wide margin of safety in the size of our animal herd. A sympathetic survey of the question with wide dissemination of the facts so obtained would be a worthy service that far-seeing citizens can render in every community.

ADVERTISING

This, from the opening paragraph of a heart-to-heart letter of Swoboda—the gentleman who will "guarantee to give you perpetual youth"—to a prospective sucker:

> You would never forgive me, and I could never forgive myself, nor could the creative forces of the Universe forgive us, if I failed to bring you to the point of evolutionizing, consciously, progressively, and intensively.

As an advertising blurb, this ranks high. Although possibly the fourth paragraph from the same letter is almost as good:

> Through Conscious Evolution, I convert weakness into strength, illness into health, fear into confidence, timidity into courage, worry into optimism, a negative personality into a positive personality, and old age into youth.

And the production of super-men no longer is to be confined to the Central Empires, for:

> Conscious Evolution has made possible for everyone the possession of super-health, super-vitality, super-courage, super-aggressiveness, super-mental. power, and super every power.

And this is the sort of stuff which staid and respectable publications are willing to advertise, and even, if necessary, editorially defend. Evolution, we are told, has taken a million years to make a man out of a monkey; modern advertising reverses the process in a day.

Dental Dressers.—To provide for continued and systematic dental attention to schoolchildren without prohibitory expense to the rate payers, officials in the Derbyshire district of England, according to the *Medical Officer*, Aug. 10, 1918, at the suggestion of the dental officer of the schools, put into practice the training of dental dressers, young women, who, after six months or a year of training were found competent as dental hygienists and were able to detect irregularities of the teeth, detect caries by probe and mirror, chart defects correctly, do simple dressings, select septic temporary teeth for extraction, scale well, drill and excavate caries and make fillings where the pulp cavity was not reached, and extract temporary teeth. The 80,000 schoolchildren of the district would have necessitated the employment of ten full time dentists at an expense of 10,000 pounds, while by the expedient of employing dental dressers the number of full time dentists was reduced to three, each having under him three trained dental dressers at a total expense of 3,000 pounds.

Medical Mobilization and the War

Rank of Medical Aides to Governors

As a recognition of the importance of their work, medical aides to governors have been given the rank of captain in all states having a population of less than a million and a half, and of major in states having a larger population than a million and a half.

Red Cross Offers Mourning Emblems

The War Council of the American Red Cross announces that that organization will provide mourning brassards free to the parents or widows of men who have died in the service, and will furnish the same at cost to other members of the family. The brassard is to be worn on the left sleeve, midway between the elbow and shoulder, is a band of black broadcloth or other material, 3 inches wide, on the surface of which the regulation military star is embroidered in gold thread.

Military Pathologic Museum

Major C. J. Herrick, M. C., has been detailed to the Army Medical Museum for the duty of receiving and disposing of pathologic specimens forwarded to the museum from military centers at home and abroad. Interesting specimens from civil life will be received also. Major Herrick will see to the preparation and preservation of these specimens and will determine what disposition will be made of them; some will be kept as permanent exhibits for the museum; others will be distributed for instruction purposes; and others, including duplicates, will no doubt be sent to swell similar collections elsewhere.

Medical Students and the Draft

The Provost Marshal-General has addressed the following telegram to the draft executives of all states:

"It has been brought to the attention of this office that many Local Boards are calling registrants for induction who had enlisted in the Enlisted Reserve Corps of the Medical Department under Section 151, Old Regulations, on mistaken assumption that under telegram Number B 2546 such enlistment held the registrant in Class V only until September 16.

"Registrants who enlisted in the Enlisted Reserve Corps of the Medical Department as aforesaid should be held in Class V and should not be confounded with registrants who enlisted for special training in camps and schools for a limited period expiring September 16, referred to in Telegram B 2546. Please communicate contents of this telegram to all Local Boards.

Crowder."

Red Cross Mission to Italy

The Italian Tuberculosis Unit of the American Red Cross, under the supervision of Col. Robert Perkins, Red Cross commissioner of Italy, will sail in a short time to conduct a health campaign with the particular objective of stamping out tuberculosis. The director of the unit is Dr. William Charles White of Pittsburgh, and associated with him are Dr. John H. Lowman, Cleveland, chief of the medical division; Louis I. Dublin, New York City, chief of the division of medical statistics; Dr. Richard A. Bolt, Cleveland, of the child welfare division; Dr. Erwin A. Peterson, Cleveland, chief of the division of medical inspection of public schools; Dr. Robert G. Paterson, Columbus, Ohio, chief of the division of education and organization; Miss Mary S. Gardner, chief of the division of public health nursing, and Lewis D. Dement, Framingham, Mass., executive manager.

Medical History of the War

Further steps toward writing the medical history of this war are being taken by the training of men to illustrate pictorially the medical and surgical pathology which will come under observation in the camps and hospitals both at home and overseas. A section of a dozen or more enlisted men under the command of a commissioned officer are on duty at the Army Medical Museum for special training in this branch of art. Among other features of the training is a thorough course in anatomy. Dr. D. S. Lamb, the veteran anatomist of the museum, has been engaged in teaching these men by didactic lectures and by demonstration of the wealth of material in the museum. Dr. W. F. R. Phillips, dean and professor of anatomy of the Medical College of South Carolina, has about completed a course in practical anatomy, guiding the men through the complete dissection of cadavers. Dr. Phillips is now about to leave for Charleston, S. C., to take up his duties at the medical school there.

Commissions Offered and Orders to Active Duty

Successful applicants for commission in the Medical Corps of the Army receive a letter from the Surgeon-General's Office informing them that they have been recommended for a commission; they are also notified that commissions are now awarded with orders to active duty immediately on acceptance. In due time—it may be a week, or three or four weeks—the applicant receives a telegram from the Adjutant-General's Office informing him that he has been awarded a commission; and ordering him to active duty at a definite post within ten days *after date of acceptance.* The acceptance is to be telegraphed to the Adjutant-General's Office and the action taken telegraphed to the Surgeon-General's Office. In some instances the brief time allotted works hardship on physicians whose affairs could not be adequately closed up in this time. It is advisable for the physician, on receipt of the letter from the Surgeon-General's Office, to begin to arrange his affairs, but not to close up anything finally. If, on receipt of the telegram from the Adjutant-General's Office, the officer finds that he requires more than the ten days of grace before departure, he should delay sending his telegram of acceptance to the Adjutant-General, but only so long as is absolutely necessary.

Information for Disqualified Draft Registrants

On the recommendation of the Surgeon-General of the Public Health Service, the Provost Marshal-General of the United States Army has arranged to distribute through the local draft boards, a circular of instructions prepared by the Public Health Service called "Information for Guidance and Assistance of Registrants Disqualified for Active Military Service Because of Physical Disabilities." In the instructions accompanying this document, the Surgeon-General points out that in the first draft about one third of the men examined were rejected for physical disability and there will doubtless be many among those examined in the new draft. The object of the circular is to give to the rejected men definite instructions as to the meaning of their disabilities and to appeal to them to correct the disability as far as possible. This will not only serve to reclaim many men for military service, but will lessen the burden of illness and disability among those engaged in essential industrial work. The circular contains specific information concerning the commoner causes of rejection or deferred classification such as defective eye sight, teeth, feet, underweight, overweight, hernia, etc. It is said that experience has shown that the proportion of persons with physical impairment is greater in persons between 30 and 40 than those between 20 and 30. This means, probably, that more disability will be found among those called by the new draft. Each registrant rejected will be given one of these circulars and in addition arrangements have been made by which specimens of the circular will be furnished to life insurance companies, fraternal organizations, labor unions, employers of labor and others who desire to reprint and make use of the circular. Requests for specimen copies should be made of the United States Public Health Service, Washington, D. C.

Promotions of Medical Officers Abroad

For some time considerable dissatisfaction existed among medical officers on duty in France because of the slowness of promotion, especially as compared with the rate of promotion of medical officers still in the United States. However, it has recently been announced that efforts are being made to accelerate promotion of reserve officers in France. July 29, recommendations were sent for the promotion of ninety-eight officers serving with the British Expeditionary Forces, and July 30, fifty-eight other officers were recommended for promotion. The *Stars and Stripes* for August 16 states that the policy governing the Medical Reserve Corps promotions recognizes that several factors should be considered in determining the rank of physicians coming into the Army in time of war: (1) age and length of professional experience; (2) length of active service, and (3) character of active service, taking into consideration whether or not it has been distinguished by unusual self-denial, gallantry, efficiency or hardships. Commanding officers and senior medical officers have been requested to accumulate data for determining these factors in the case of medical officers in line for promotion. It is understood, however, that officers under 31 years of age are not to be promoted except in special cases in which they have rendered unusual distinguished service and have been more than a year on active duty. All officers of the Medical Corps in Europe are to be placed on a roster according to age in each grade. The officer's age is to be determined by taking his actual age and adding four months for each month of service; thus, all lieutenants whose actual age is above 31 and who have completed one year's service will be eligible for recommendation to be promoted to captain. Taking the number of first lieutenants as a basis, the number of officers in the grades of captain and major are to be one lieutenant to 3.9 captains, to 1.7 major. It is understood also that the present recommendations for promotions to majorities shall concern only officers above the age of 40, and for promotion to captaincies only those lieutenants above the age of 35, except in special instances.

CORRECTION

The "Honor Roll" published in The Journal of June 1, 1918, should have contained the name of Lieut. H. L. HOLZBERG, M. C., U. S. Navy, attached to the Naval Training Station, San Francisco.

COMMISSIONS ACCEPTED, MEDICAL CORPS, U. S. ARMY

Previous lists published in The Journal, June 1, 22, and 29, July 13, 20 and 27, August 3, 10, 24 and 31, September 7, 14 and 21.

ARKANSAS

McGeheel—DeClark, W. H.

CALIFORNIA

Modesto—Clark, I. J.
San Francisco—Nolan, T. J.
O'Connor, J. H.
Stone, E. E.
Scotia—Cottrell, E. L.
Williams—Salter, N. H.

COLORADO

Keota—Wells, N. D.
Pueblo—Keeney, M. J.

CONNECTICUT

Hartford—Vernlund, C. F.

FLORIDA

Wauchula—Kayton, M. C.

GEORGIA

Asburn—McKenzie, G. C.
Atlanta—Childs, L. W.
Fayettesville—Malone, O. T.
Hoboken—Dorminy, A. C.
Lindale—Moore, C.
Morven—Meadows, C. B.
Ocilla—McElroy, S. L.
Plains—Wise, S. P.
Screven—Tyre, J. L.
Waycross—Oliver, J. A.

IDAHO

Eden—Scroggs, W. P.
Moscow—Dodd, J. A.
Payette—McDonald, J. L.

ILLINOIS

Chicago—Barth, J. J.
Donnelly, O. A. R.
Haidopoulos, C. G.
Hofman, H.
Jeffrey, C. W.
Levy, E.
Little, Z. J.
Mowry, A. E.
Smith, R. A.
Zuercher, J. C.
Elgin—West, H. H.
Forrest—Hamilton, O. P.
Sugar Grove—McNair, F. M.
Thomasboro—Kelso, C. E.

INDIANA

Anderson—Kimble, F. A.
Arcadia—Thayer, J. O.
Bristow—Coultas, P. J.
Dale—McClary, [illegible] V.
Greenfield—Sisson, E. R.
Hammond—Mikesch, W. H.
Indianapolis—Hendricks, R. G.
Ottinger, R. C.
Lafayette—Hannell, R. V.
Logansport—Terflinger, F. W.
Mitchell—Gibbons, G. L.
New Palestine—Mace, E. E.
Quincy—McQueen, W.
Shelbyville—Sammons, L. C.

IOWA

Bedford—Sollis, D. B.
Boone—Healy, M. A.
Sheldon—Myers, J. W.
Spirit Lake—Geissinger, J. DeW.

KANSAS

Eudora—Robinson, W. H.
Madison—Haynes, E. E.
Mayfield—Clark, E. F.
Norton—Tinney, R. M.
Osawatomie—Carmichael, F. A.
Salina—Brittain, O. R.
Topeka—O'Connell, J. H.

KENTUCKY

Ashland—Sturgell, G. M.
Covington—Menefee, B. K.
Irvington—Meador, R. W.
Lancaster—Edwards, J. E.
Louisville—McKenna, H.
Stroud, J. B.
Middletown—Wetherby, S. D.
Perryville—Hopper, W. O.

LOUISIANA

Shreveport—Hicks, O. B.
Smith, W. W.

MAINE

North Berwick—Brown, L. H.

MARYLAND

Baltimore—Perry, W. B.
Towson—Sargent, G. F.

MASSACHUSETTS

Brockton—Lawrence, J. H.
Miles, C. G.
Holyoke—Brady, W. F.
Tewksbury—Tuttle, H. K.

MICHIGAN

Custer—Duguid, L. H.
Detroit—Clark, R. L.
Clippert, J. C.
Luce, H. A.
Radzinski, A. J.
Hickory Corners — Singleton, W. A.
Ionia—McCann, J. J.
Negaunee—Larson, C. J.

MINNESOTA

Red Wing—Beyer, A. G.

MISSISSIPPI

Bassfield—Blount, E. N.
Crowder—Grice, E. A.
Leesburg—Davis, G. C.
Natchez—Smith, H. M.
Sherard—Rawles, E. L.
Tupelo—Tomer, W. A.

MISSOURI

Carthage—Bryan, H.
Cole Camp—Van Allen, J. P.
East Prairie—Finley, F. L.
Ewings—Cole, P. F.
Greensburg—Gibbs, C. A.
Hamilton—Daley, L. M.
Hurricane—Vaughn, S. C.
Kansas City—Albers, E. A.
Robinson, D. B.
Marshall—McLennan, T. A.
Purdy—Kelly, B. B.
Salisbury—Hawkins, G. W.
St. Louis—Homan, J. S.
Jeude, J. J.
Malone, J. T.
Thompson, D. A.
Windsor—Blackmore, T. A.

MONTANA

Butte—Bernheim, L.
Livingston—Vicars, F. O.
Stockett—Smith, W. R.

NEBRASKA

Columbus—Allenburger, C. A.
Harrison—Cramer, L. L.
Lincoln—Zemer, S. G.

NEW HAMPSHIRE

Groveton—Hight, C. E.
North Walpole—Liston, A. C.

NEW JERSEY

Newark—Hewson, J. S.
Tidaback, J. D.
Park Ridge—Garrett, H. S.
Perth Amboy—Fithian, G. W.
Union Hill—Curtis, G. P.

NEW YORK

Auburn—Seccomb, M. L.
Brooklyn—Kohlenberg, M.
Rauh, M. T.
Simrell, G. W.
Buffalo—Trudnowski, J. F.
Irondequoit—Bradstreet, S. W.
Mount Upton—Heimer, F. S.
New York—Hennesay, J. P.
Kahn, I. W.
Rambaud, G. G.
Yudkowsky, P.
Rochester—Toole, C. D.
Standish—O'Keefe, E. B.
Syracuse—Mellor, L. R.

NORTH CAROLINA

Plymouth—McGowan, C.

OHIO

Bedford—Ralston, J. H.
Cincinnati—Decourcy, J. F.
Cleveland—Cowles, E. C.
Hurt, J. A.
Lee, F. C.
Fresno—Kitsmiller, C. R.
Lancaster—Smith, R. H.
Martins Ferry—McGinnis, J. C.
Newark—Essington, U. K.
Newcomerstown—Berry, E. V.
Niles—Knox, J. D.
Selma—Nehls, E. C.
Tiffin—Hendershott, R. R.
Youngstown—Kofford, B. S.
Lautenschlager, T. H.

OKLAHOMA

Bartlesville—Kingman, W. H.
Delaware—Wilkinson, G. M.
Oklahoma City—Phelan, J. R.
Sulphur—Salter, J. M.
Watonga—Doty, H. W.
Welch—Bradshaw, J. O.

OREGON

Elkton—Francis, C. H.
Medford—Barber, M. C.
Westfall—Schenk, H. J.

PENNSYLVANIA

Altoona—Metzger, C. H.
Belleville—Farquhar, G. W.
Butler—McCandless, D. L.
Friedensburg—Stewart, H. H.
Glassport—Erhard, E. L.
Hillsville—McWilliams, W. M.
Nesquehoning—Shutack, J.
Philadelphia—Gorman, J. F.
McKee, J. H.
Shallow, T.
White, C. A.
Pittsburgh—Gardner, W. E.
McMaster, C. C.
Sherrill, A. W.
Portage—Yearick, G. I.
[illegible]nds, W. L.
[illegible] T. A.
[illegible] C. W.
Swissvale—Morrow, H. W.
Tarentum—Orris, C. S.

SOUTH CAROLINA

Charleston—Bold, F. H.
Deas, H.

TENNESSEE

[illegible] N.
[illegible] F. M.
[illegible] C. J.
Newbern—Brewer, J. D.
St. Elmo—Davis, M. D.

TEXAS

Ambrose—Price, C. G.
Bellville—Neely, J. A.
Bonham—Nevill, O. C.
Como—Randolph, B.
Dalhart—Dawson, G. W.
Dallas—Donald, H.
Gilbert, T. C.
Irvine, E. J.
Pierce, F. A.
Fort Worth—Brannon, H. O.
Garner—Howard, C. C.
Holder—Holder, T. D.
Jonesboro—Moore, W. M.
Jourdanton—Moore, J. A.
Port Arthur—Reed, J. P.

UTAH

Ogden—Nixon, J. W.
Salt Lake City—Hatch, F. F.
McHugh, F. M.

VIRGINIA

Nathalie—Lacy, J. B.
Salem—Brown, W. R.

WASHINGTON

Tacoma—Pascoe, C. S.
Yakima—Carver, W. H.

WEST VIRGINIA

Bluefield—Kirk, J. B.
Charleston—Swint, B. H.
Morganstown—Fisher, R. W.
War—Peery, C. E.

WISCONSIN

Ladysmith—Stephenson, W. L.
Milwaukee—McNary, J. F.
McNaughton, W. T.
Weber, A. J.
Racine—Froney, M. A.
Soldier's Grove—Peterson, N. A.
Wausau—Schlegel, H. T.

WYOMING

Lusk—Dale, D. H.

COMMISSIONS ACCEPTED, U. S. NAVAL RESERVE FORCE

Previous lists published in The Journal, June 29, July 13, 20 and 27, August 3, 10 and 31, September 7 and 14.

ALABAMA

Montgomery—Blue, J. H.

CALIFORNIA

Lodi—Bolinger, H. J.
Todd, E. B.

CONNECTICUT

Bridgeport—O'Brien, T. F.

DISTRICT OF COLUMBIA

Washington—Copeland, E. P.
Ferguson, C. E.
Lewis, H. S.
Sommer, H. O.
Walker, R. R.
White, C. S.

INDIANA

Indianapolis—Weil, H. J.

KENTUCKY

Cane City—Barbour, H. L.
Madisonville—Thompson, A. L.

LOUISIANA

Pineville—Quin, F. W.

MASSACHUSETTS

Boston—Brickley, W. J.
Cambridge—Peirce, B. H.
Gloucester—Shinn, P. A.
North Adams—Highley, C. J.

MISSISSIPPI

Norfield—Sartin, L. B.

MISSOURI

Kansas City—Lamar, F. C.
St. Louis—Bothman, L.

NEW JERSEY

Atlantic City—Charlton, C. C.
Bayonne—Klein, E.
Bloomfield—Moore, J. D.
Newark—Altman, C. D.

NEW YORK

Brooklyn—Harris L.
Meeks, F. R.
Zahler, I.
New York—Cowles, E. S.
Gatewood, W. L.
Lowsley, O. S.
MacDonald, J.
Mishkin, L. I.
Schulhofer, J.
Serotta, H. M.
Steinmetz, F. C.
[illegible] W.
[illegible] R. B.

NORTH CAROLINA

Middlesex—Lewis, S. V.

OHIO

Akron—Jones, J. L.
Columbus—Stanton, F. M.

OREGON

The Dalles—Nitschke, E. J.

PENNSYLVANIA

Bellevue—Gross, A. H.
Philadelphia—Delo, J. M.
Ewing, H. F.
Holmes, J. W.
Loftus, J. E.
Mann, B. H.
Norris, C. C.
Robelen, C. H. C.
Rosenthal, J. M.
Stull, H. T.
Thomas, B. A.
Treacy, A. J. M.
Turner, L.
Weinstein, M. A.
Welham, W. M. S.
Tamaqua—Hinkle, W. H.
Watsontown—Adams, F. R.

TEXAS

Galveston—Braun, I.
Whitewright—May, R. R.

VIRGINIA

Chatham—Bennett, C. D.

WISCONSIN

Milwaukee—Kettelhut, E. J.
Wauwatosa—Van de Erve, J.

COMMISSIONS OFFERED AND ORDERS TO DUTY ON ACCEPTANCE

Alabama

To Camp McClellan, Ala., Lieuts. J. M. SANKEY, Downs; J. A. SMITH, Melven.

To Fort Oglethorpe for instruction, Capt. D. G. CAMPBELL, Mobile; Lieut. S. R. BENEDICT, Birmingham.

Arizona

To Camp Fremont, Calif., Lieuts. H. A. HUGHES, Jr., Buckeye; E. J. GOTTHELF, Jr., Tucson.

California

To Camp Fremont, Calif., Lieuts H. H. MANN, Los Angeles; F. A. KINSLOW, San Francisco.

To Fort Oglethorpe for instruction, Capt. B. G. PINKERTON, Los Angeles; Lieut. W. B. HARDIE, Hume.

To Fort Riley for instruction, Capt. J. P. DOUGALL, Los Angeles; Lieuts. D. I. ALLER, Merced Falls; J. R. PERRY, Sherman.

To report to the commanding general, Hawaiian Department, Capts. A. FELLOWS, Los Angeles; K. B. SMITH, Oakland; Lieut. A. W. CONNER, San Jose.

Colorado

To Fort Riley for instruction, Lieut. W. R. TUBBS, Carbondale.

Connecticut

To Camp Sevier, S. C., Capt. W. F. GORDON, Danbury.

To Fort Oglethorpe for instruction, Capt. R. J. DWYER, Hartford; Lieut. H. E. STEWART, New Haven.

Delaware

To Accontink, Va., Lieut. S. M. ZION, Wilmington.

District of Columbia

To Camp Leach, D. C., Lieut. G. K. BAIER, [illegible]

To Camp Meade, Md., base hospital, Capt. E.

To Fort Oglethorpe for instruction, Lieuts. ZIGMAND, Washington.

To Walter Reed General Hospital, D. C., Capt. S. KEY, Washington.

Florida

To Fort Oglethorpe for instruction, Lieut. P. P. PILLANS, Orlando.

Georgia

To Camp McClellan, Ala., Lieut. W. W. GRIFFITH, Bainbridge.

To Camp Sheridan, Ala., Lieut. C. S. LYNCH, Lumpkin.

To Fort Oglethorpe for instruction, Lieuts. P. M. LEWIS, Bainbridge; E. R. PARK, LaGrange; P. C. QUARTERMAN, Valdosta.

Idaho

To Camp Dodge, Iowa, Lieut. N. H. FARRELL, Mackay.

To Fort Riley for instruction, Lieut. J. C. PATTERSON, Burley.

Illinois

To Camp Custer, Mich., Capt. O. C. YODER, Peru; Lieuts. M. FINKEL, Blue Island; A. H. FINK, Chicago; A. W. CHRISTENSON, Rockford.

To Camp Dodge, Iowa, Capt. J. G. CARR, Chicago.

To Camp Grant, Ill., Capts. J. C. GRIFFITH, Bushnell; H. W. DUERINGER, Elgin; Lieuts. R. R. JAMIESON, Chicago; R. H. WOODS, LaSalle.

To Camp Lewis, Wash., base hospital, Capt. J. H. GREGORY, Milford.

To Camp Zachary Taylor, Ky., Lieuts. E. W. OLIVER, Chicago; J. L. ALLEN, Robinson; A. B. CHILDS, Keithsburg.

To Fort Oglethorpe for instruction, Capts. J. E. WOELFLE, Cairo; E. F. DAUM, O. E. GRANT, C. H. SOLOMON, Chicago; W. E. POTTER, Oak Park; Lieuts. S. DAMIANI, B. F. DAVIS, J. D. ELLIS, D. KLEMPTNER, J. R. LAVIERI, M. P. SEIDNER, H. M. SONDEL, Chicago; J. H. CAMPBELL, Collison; J. J. WALSH, Elgin; C. S. GREGORY, Findlay; S. M. PITTMAN, Greenbush; J. F. NOLAN, Mattoon; K. W. WAHLBERG, Moline; P. H. ANTHONY, Morris; E. ZIMMERMAN, Quincy; T. THOMPSON, Shelbyville; H. H. FLETCHER, Winchester.

To Chillicothe, Ohio, to examine the command for nervous and mental diseases, Lieut. R. F. DOWELL, Elgin.

To Louisville, Ky., Lieuts. J. LEVETT, E. W. LYONS, Chicago; H. B. MARTIN, Grayville; F. P. COWDIN, Springfield.

To New Haven, Conn., Yale Army Laboratory School, for instruction, Lieut. B. G. R. WILLIAMS, Paris.

To New York, Neurological Institute, for instruction, Capt. O. T. ROBERG, Chicago.

Indiana

To Camp Custer, Mich., Capt. C. A. UNDERWOOD, Indianapolis; Lieut. A. P. HAUSS, New Albany.

To Camp Zachary Taylor, Ky., Lieut. J. F. McCOOL, Indianapolis.

To Denver, Colo., Lieut W. A. GEKLER, Terre Haute.

To Fort Oglethorpe for instruction, Capts. D. M. REYNOLDS, Indianapolis; F. R. CLAPP, South Bend; W. N. THOMPSON, Sullivan; F. A. ZELLER, Union City; Lieuts. R. H. WAGONER, Colburn; W. R. HURST, Evansville; W. PALM, Harmony; F. R. MAXWELL, Martinsville; C. B. COMPTON, Michigantown; J. P. GIBSON, Owensville; H. C. MARTINDALE, Pendleton.

Iowa

To Camp Grant, Ill., Capts. J. M. WEISS, Knoxville; E. E. LUSK, Missouri Valley; J. F. COLE, Oelwein; Lieut. W. CORNS, Montour.

To Fort Des Moines, Iowa, base hospital, Major G. DONOHOE, Cherokee.

To Fort Oglethorpe for instruction, Capt. N. BOGGS, New London; Lieuts. H. J. HEUSINKVELD, Clinton; C. I. THOMAS, Guthrie Center.

To Fort Riley, Capt. W. RUML, Cedar Rapids. For instruction, Capt. G. M. MIDDLETON, Davenport; Lieut. J. O. WEAVER, Shenandoah.

Kansas

To Camp Grant, Ill., Lieut. L. M. BEATSON, Ashton.

To Camp MacArthur, Texas, Lieut. P. D. BROWN, Alton.

To Fort Riley, Lieuts. R. LAING, Concordia; R. B. EARP, Eldorado; H. R. WILSON, Harris; B. T. PRATHER, Peabody; H. A. WEST, Yates Center. For instruction, Lieuts. R. A. LIGHT, Chanute; W. L. SPEER, Clay Center.

To New Haven, Conn., Yale Army Laboratory School, Lieut. F. L. FLACK, Coffeyville.

Kentucky

To Camp Custer, Mich., Capts. H. R. NUSZ, Cecilia; S. P. OLDHAM, Owensboro.

To Camp Zachary Taylor, Ky., Lieut. H. J. BEARD, Livermore.

To Fort Oglethorpe for instruction, Capts. J. G. TALBOT, Burkesville; L. L. SMITH, Covington; L. KAHN, Louisville.

To Fort Wayne, Mich., Lieut. A. V. JONES, Louisville.

To New Haven, Conn., Yale Army Laboratory School, for instruction, Lieut. W. H. ALLEN, Louisville.

Louisiana

To Camp Sheridan, Ala., Lieut. T. P. BELL, New Orleans.

Maine

To Camp Dix, N. J., Lieut. G. L. BURRITT, Harrington.

To Hoboken, N. J., Capt. F. E. CARMICHAEL, Portland; Lieut. G. E. DORE, Guilford.

Maryland

To Camp Upton, N. Y., Capt. L. M. C. PARKER, Baltimore.

To Fort Oglethorpe for instruction, Capt. M. S. ROSENTHAL, Lieuts. E. G. HALL, E. P. SMITH, Baltimore; H. W. KRANTZ, Union Bridge.

To New Haven, Conn., Lieut. W. A. BRIDGES, Towsen.

To Washington, D. C., Capt. J. L. ADAMS, Takoma Park.

Massachusetts

To Camp Dix, N. J., Capt. W. Y. FOX, Taunton; Lieut. R. B. RAND, North Abington.

To Camp Upton, N. Y., Lieuts. A. R. FRIED, Newton; E. H. JUDD, Springfield.

To Fort Oglethorpe for instruction, Capts. G. A. MOORE, Brockton; D. S. LUCE, Canton; A. G. RICE, Springfield; Lieuts. C. F. WILCOX, Jr., Boston; W. L. TUCKER, Hinsdale; J. E. DEMPSEY, Newton; H. H. BARD, Pittsfield; H. L. HIRSCH, Springfield; W. H. PULSIFER, Whitman.

To Hoboken, N. J., Lieuts. J. F. AHERN, R. D. MARGESON, Boston; J. H. BURKHEAD, Middleborough.

To Mineola, N. Y., Hazelhurst Field, Capt. H. J. HOWARD, Malden.

To New Haven, Conn., Capt. C. A. RILEY, Boston; Lieut. W. B. BARTLETT, Concord.

To Plattsburg Barracks, N. Y., Lieut. W. J. VIVIN, East Walpole.

To Washington, D. C., Capt. W. GOODELL, Springfield.

Michigan

To Camp Custer, Mich., Lieuts. S. K. KESHISHIAN, Detroit; W. N. BRALEY, H. F. NORTHRUP, Highland Park.

To Camp Shelby, Miss., base hospital, Lieut. J. K. ORMOND, Detroit.

To Fort Oglethorpe for instruction, Capts. J. E. MAUNDERS, B. R. SUMNER, Detroit; Lieuts. C. P. DOYLE, Frankfort; H. W. WILEY, South Haven.

To New York, Neurological Institute, for instruction, Lieut. C. S. KENNEDY, Detroit.

The following order has been revoked: *To New York*, Neurological Institute, for instruction, Capt. R. C. STONE, Battle Creek.

Minnesota

To Camp Grant, Ill., Lieut. F. R. PEARSON, St. Paul. Base hospital, Capt. K. BACON, St. Paul.

To Denver, Colo., Lieut R. BOSWORTH, St. Paul.

To Fort Oglethorpe for instruction, Capt. W. J. COCHRANE, Lake City; Lieuts. T. A. LEE, Hibbing; J. E. O'DONNELL, Minneapolis.

Mississippi

To Camp Custer, Mich., Lieut. E. C. O'CAIN, Thomastown.

To Camp Grant, Ill., Lieut. E. R. NOBLES, Rosedale.

To Camp Sheridan, Ala., Capt. J. E. POWELL, *Clinton*; *Lieut. R. W.* HOWLAND, Fondren.

To Fort Oglethorpe for instruction, Capt. J. CRISLER, Jackson; Lieut. A. G. TOUCHSTONE, Meridian.

Missouri

To Camp Dodge, Iowa, Lieut. E. M. MOORE, Corder.

To Camp Fremont, Calif., Lieut. A. B. JONES, Shackleford.

To Camp Grant, Ill., Capt. J. R. BRIDGES, Kahoka; Lieuts. C. T. RYLAND, Lexington; J. L. LOUTZENHISER, Ravanna.

To Camp Lee, Va., Lieut. A. L. FITZPORTER, St. Louis.

To Fort Oglethorpe for instruction, Capts. C. H. BRYANT, Kansas City; J. B. EURE, Poplar Bluff; O. W. CLABAUGH, Sedalia; O. C. RAINES, St. Louis; Lieuts. S. C. SLAUGHTER, Fredericktown; H. I. OWEN, Fulton; J. C. STARKS, Gower; E. L. SLOAN, Joplin; C. A. BROWN, E. L. MILLER, Kansas City; H. T. COLEMAN, Pattonville; O. F. FLADER, R. F. HYLAND, St. Louis.

To Fort Omaha, Neb., Lieuts. R. Q. KELLY, Bunceton; W. G. *ATWOOD, Carrollton*; *W. J. HANSEN, St. Joseph*; *O. R. ENGELMANN*, H. H. HUGHART, J. S. SHEETS, St. Louis; J. M. RIGGS, Wayland.

To Fort Riley for instruction, Capt. G. Y. BRIGGS, St. Louis; Lieuts. O. L. RUTHERFORD, Bellflower; R. W. GAY, Ironton; A. C. FIELD, Kansas City.

To Louisville, Ky., Lieuts. A. L. MEREDITH, Prairie Home; E. B. KESSLER, St. Joseph.

To New Haven, Conn., Yale Army Laboratory School, for instruction, Lieut. G. V. DORSHEIMER, Kansas City.

To Rockford, Ill., Capt. F. J. LONGFIELD, Lathrop; Lieut. F. M. SHAFER, Osborn.

Montana

To Fort Oglethorpe for instruction, Lieut. H. C. PARRISH, Fort Benton.

To Fort Riley for instruction, Capts. C. I. TITUS, Great Falls; M. D. RIDLE, Shelby; Lieuts. J. H. PHILLIPS, Butte; H. L. KOEHLER, Circle.

Nebraska

To Fort Oglethorpe for instruction, Lieuts. C. C. PAXTON, Archer; F. M. ANDRUS, Lincoln.

To Fort Riley, Lieut. J. L. MAGILL, Holdredge.

Nevada

To Camp Cody, N. M., base hospital, Capt. L. V. SMITH, Reno.

To Fort Oglethorpe for instruction, Lieut. J. B. WILSON, Rochester.

New Hampshire

To Camp Meade, Md., Lieut, A. LAGACE, Franklin.

To Fort Oglethorpe for instruction, Lieut. F. E. SPEAR, Woodsville.

To Plattsburg Barracks, N. Y., Lieut. B. E. SANBORN, Manchester.

New Jersey

To Camp Dix, N. J., Capt. C. H. MAYHEW, Millville.

To Camp Jackson, S. C., Lieut. W. F. COSTELLO, Dover.

To Camp Leach, D. C., Lieut. H. W. BROWN, *Jersey City*.

To Camp Lee, Va., Lieut. T. R. ADAMS, Califon.

To Fort Oglethorpe for instruction, Capts. A. NELSON, Jersey City; F. R. HAUSSLING, N. G. PRICE, Newark; J. N. RYAN, Passaic; Lieuts. E. H. MOORE, Asbury; M. H. STEIN, Elizabeth; R. G. OWENS, Jersey City; J. H. LOWREY, Newark; R. D. VREELAND, Passaic.

To Hoboken, N. J., Lieut. V. M. D. MARCY, Cape May.

To Mineola, N. Y., Hazelhurst Field, Capt. C. WILLIAMS, Lakewood.

To New Haven, Conn., Yale Army Laboratory School, for instruction, Lieut. A. AMOLS, Newark.

New Mexico

To Denver, Colo., Lieut. H. V. FALL, Roswell.

New York

To Camp A. A. Humphreys, Va., Lieut. J. J. McGLADE, New York.

To Camp Dix, N. J., Capt. M. S. POLAK, New York; Lieuts. O. P. JOSLIN, Great Bend; J. E. GETMEN, New York.

To Camp Jackson, S. C., base hospital, Major R. H. McCONNELL, New York.

To Camp Upton, N. Y., Lieuts. H. P. FOEHRENBACH, Brooklyn; C. T. FOWLER, Dexter; E. M. DINGS, Sacket Harbor.

To Fort Oglethorpe for instruction, Capts. R. L. SULLIVAN, Baldwinsville; C. B. M. DUGAN, Beacon; S. C. HOLLIS, Belleville; B. G. BALCKMAR, G. J. DOYLE, Brooklyn; G. R. CRITCHLOW, J. A. MACLEOD, Buffalo; T. D. BUCHANAN, J. S. K. HALL, E. W. HOLLADAY, H. E. MEEKER, A. A. *MOORE*, P. PRIOLEAU, New York; G. B. VAN DOREN, Watertown; J. S. PARKER, White Plains; J. P. TROTTER, Yonkers; Lieuts. W. A. BEHAN, Binghamton; L. L. COHAN, R. P. MORRISON, Brooklyn; J. G. KRAUSS, Elmhurst; J. A. G. MAC PHAIL, Katonah; M. H. BARSKY, J. BONDY, A. C. FREEMAN, F. C. KEIL, A. V. ROCKWELL, New *York*; T. F. MANLEY, H. W. McNITT, *Norwich*; C. F. POTTER, Syracuse. D. E. FRASER,

To Hoboken, N. J., Capts. C. M. FIERO, Leicaster; R. M. HALL, Broad- Lyndonville; C. SUMNER, Rochester; Lieuts. albin; G. MANULKIN, Brooklyn.

To New Haven, Conn., Yale Army Laboratory School, for instruction, Capt. H. A. CRAIG, Staten Island; Lieut. L. B. SISSON, Auburn.

To Plattsburg Barracks, N. Y., Major J. R. HUNT, New York.

To report to the commanding general, Eastern Department, Capt. W. H. McGRAW, Cortland.

To Rockefeller Institute for instruction in laboratory work, Capt. O. T. AVERY, New York.

North Carolina

To Camp Wadsworth, S. C., Capt. J. E. KERR, Lilesville.

To Fort Oglethorpe for instruction, Lieut. J. L. ADAMS, Asheville.

To report to the governor of North Carolina, as medical aide, Capt. A. W. KNOX, Raleigh.

North Dakota

To Fort Oglethorpe for instruction, Capt. W. B. WANNER, Wimbledon.

To Fort Riley for instruction, Capt. G. A. SARCHET, New *England*; Lieut. J. SIMON, Kintyre.

Ohio

To Camp Custer, Mich., Lieuts. F. M. OXLEY, Cincinnati; A. T. CARTER, Cleveland; F. E. GINDER, Darbyville; W. D. GREGG, Dayton; R. A. H. KNISELY, Toledo; P. E. DECATUR, Washington Court House.

To Camp Holabird, Md., Lieut. Z. H. BALLMER, Toledo.

To Camp Leach, D. C., Capt. P. J. HANZLIK, Cleveland.

To Camp Lee, Va., Lieut. J. D. HARTZELL, North Star.

To Camp Shelby, Miss., base hospital, Lieut. W. J. SCOTT, Cleveland.

To Camp Zachary Taylor, Ky., Capt. E. H. KNOWLTON, Mantua; Lieuts. F. B. KALOR, Bellefontaine; C. G. GOLL, Stryker.

To Fort Oglethorpe for instruction, Capts. W. N. SHARP, Cleveland; M. H. CARMEDY, Painesville; G. W. WILLIARD, Tiffin; I. H. HAMMER, L. F. SMEAD, *Toledo*; *W. E. RANZ*, Youngstown; Lieuts. F. C. BISSELL, E. B. MALLOY, Akron; C. I. STEPHEN, Ansonia; H. N. LEEDS, W. A. TEVELUME, Cincinnati; J. R. MONIHAN, Cleveland; C. D. SIDLE, Convoy; M. H. BOWERS, Perrysburg; G. F. BAINTER, Strasberg; R. L. BIDWELL, R. E. SINEK, Toledo.

To Fort Wayne, Mich., Capt. C. O. BEARDSLEY, Ottawa; Lieuts. [illegible] Ada; H. L. MECKSTROTH, Dayton; W. H. [illegible] COBB, Toledo. [illegible] ieut. A. M. CURL, Quincy.

To New York, Neurological Institute, *Lieut. J. R. Davis*, Toledo.

Oklahoma

To Camp MacArthur, Texas, Capt. H. A. LILE, Cherokee; Lieut. I. C. MORRIS, Cushing.

To Fort Oglethorpe for instruction, Capts. J. H. SCOTT, Shawnee; W. W. WOODY, Tulsa.

To Fort Riley, Capt. J. S. VITTUM, Muskogee; Lieut. H. E. HUSTON, Aline.

Oregon

To Fort Riley for instruction, Capt. J. D. STERNBERG, Portland; Lieut. G. S. NEWSOM, Athena.

To Palo Alto, Calif., Capt. H. I. KEENEY, Portland; Lieut. E. J. CROWTHERS. Austin.

Pennsylvania

To Camp A. A. Humphreys, Va., Lieut. D. W. LEWIS, Philadelphia.

To Camp Colt, Pa., Lieut. C. M. KERWIN, Northwales.

To Camp Dix, N. J., Lieuts. A. V. PERSING, Allenwood; L. H. HENDRIXSON, New Holland.

To Camp Leach, D. C., Lieut. A. A. COLLINS, Oxford.

To Camp Upton, N. Y., Lieuts. C. B. DENNY, Oakdale; R. C. PARRISH, Philadelphia; W. W. McFARLAND, Pittsburgh; R. W. LENKER, West Leesport.

To Fort Oglethorpe for instruction, Capts. W. A. JONES, Hays; W. T. ELLIS, C. S. WILLIAMS, Philadelphia; M. M. DENLINGER, Rohrerstown; Lieu [illegible] RD, Bellevue; J. M. LEONARD, Blairsville; M. J. [illegible] A. SILVERMAN, Philadelphia; J. W. FISHER, A. H. JAHN, W. H. RODGERS, H. L. SHAFFER, Pittsburgh.

To Hoboken, N. J., Lieut. J. P. MAYER, Philadelphia.

To Lakehurst, N. J., Lieut. P. N. WENTZ, York.

To New Haven, Conn., Lieut. L. G. FLANNERY, *Philadelphia*.

To Wrightstown, N. J., Capt. W. McKEAGE, *Philadelphia*.

South Carolina

To Camp Jackson, S. C., Lieuts. R. ACKERMAN, Walterboro; J. J. GLENN, Yorkville.

To Camp Wadsworth, S. C.. Lieut. W. A. BROWN, Georgetown.

To New Haven. Conn., Major D. M. JAMES. York.

The following order has been revoked: *To Camp Shelby. Miss.*, base hospital, Lieut. V. W. BRATHAM, Orangeburg.

South Dakota

To Fort Oglethorpe for instruction, Capt. W. D. FARRELL, Aberdeen.

Tennessee

To Camp McClellan, Ala.. Lieuts. J. JACKSON. Dyer; W. M. HARDY, Nashville.

To Camp Sevier, S. C., Lieut. W. L. MEDLING, Dyer.

To Camp Pike, Ark., base hospital, Lieut. W. B. Sharp, Nashville.

To Fort Oglethorpe for instruction, Capt. J. H. McCLURE. Nashville.

Texas

To Camp Cody. N. M., Lieut. G. L. MONTGOMERY. Aquilla.

To Camp Logan, Texas, Lieuts. *J. P.* HARRIS, Midlothian; R. R. MAY, Whitewright.

To Camp MacArthur. Texas, Capt. M. C. HAGLER. New Braunfels; Lieut. J. H. TRAYLOR, Cuere.

To Fort Oglethorpe for instruction. Lieut. W. WALKER, Fort Worth.

To New Haven, Conn., Yale Army Laboratory School, for instruction, Lieut. G. TURNER, Iredell.

Utah

To Fort Riley for instruction, Lieuts. H. W. *NELSON, Ogden*; J. M. THORUP, Salt Lake City.

Vermont

To Camp Meade, Md., Lieut. R. J. GOSS, Wilder.

To Montpelier, Vt., as medical aide to the governor of Vermont, Capt. J. H. WOODRUFF, Barre.

Virginia

To Camp A. A. Humphreys, Va., Lieut. P. C. HUNDLEY, Pembroke.

To Camp Dix, N. J., Lieut. E. A. HOLMES, Bradford.

To Camp Meade, Md., Capt. W. L. McGILL, Petersburg; Lieut. S. G. Gill, Hopewell.

To Camp Zachary Taylor, Ky., Lieut. G. B. MARTIN, Richmond.

To Fort Oglethorpe for instruction, Capt. M. J. PAYNE, Staunton; Lieut. H. W. PATTON, Hemp.

To Hoboken, N. J., Capt. T. E. RUCKER, Lynchburg; Lieut. R. R. GOAD, Dug Spur.

To New Haven, Conn., Yale Army Laboratory School, for instruction, Lieut. G. A. L. KOLMER, Salem.

To Washington, D. C., Major C. C. COLEMAN, Richmond.

To Wrightstown, N. J., Capt. G. H. THOMAS, Staunton.

Washington

To Camp Fremont, Calif., Lieuts. C. A. LEWIS, Fairfield; S. J. ROWLAND, Toppenish; A. E. McDOWELL, West Seattle.

To Camp Lewis, Wash., base hospital, Capt. E. L. REGER, Spokane.

To Fort Riley for instruction, Lieuts. R. R. KERKOW, Valley; H. H. SKINNER, North Yakima.

To San Francisco, Calif., Lieut. D. B. HARVISON, Palouse. Letterman General Hospital, Capt. J. T. WHITTY, Seattle.

West Virginia

To Camp A. A. Humphreys, Va., Lieut. J. E. WOMACK, Summit Point.

To Camp Greene, N. C., Lieut. J. U. KIMBLE, Newburg.

To Fort Oglethorpe for instruction, Capt. T. J. McGUIRE, Parkersburg.

To Fort Riley for instruction, Lieut. W. H. YOUNG, Sistersville.

Wisconsin

To Camp Custer, Mich., Capt. W. G. LAW, Clidden; Lieuts. G. E. ARMSTRONG, New London; R. K. LOHMILLER, Superior; L. H. A. NOWACK, Watertown.

To Camp Grant, Ill., Lieuts. H. C. WIGER, Dallas; W. J. McLAUGHLIN, Stockbridge.

To Fort Oglethorpe for instruction, Lieut. A. M. FOSTER, Kaukauna.

To Fort Riley for instruction, Capt. C. F. MYRE, Chippewa Falls; Lieut. W. C. REINEKING, Markesan.

Wyoming

To Fort Riley for instruction, Lieuts. L. E. KINDALL, Kemmerer; W. LOWE, Sunrise.

ORDERS TO OFFICERS OF THE MEDICAL CORPS, U. S. ARMY

Alabama

To Camp Joseph E. Johnston, Fla., Lieut. R. C. McQUIDDY, Birmingham.

To Camp Lee, Va., Lieuts. J. W. SIMPSON, Athens; W. N. McCLURKIN, Camden.

To Camp Sevier, S. C., from duty as an enlisted man, Lieut. T. D. COWLES, Mobile.

To Camp Shelby, Miss., evacuation hospital, from Camp Logan, Lieut. J. H. HAYS, Bessemer.

To Camp Sherman, Ohio, from Hoboken, Major W. H. OATES, Mobile.

To Camp Zachary Taylor, Ky., base hospital, from Fort Oglethorpe, Lieut. R. M. KIMBROUGH, Thomasville.

To Fort Oglethorpe for instruction, Lieut. T. W. JONES, Camden.

To Fort Wayne, Mich., from Americus, Ga., Capt. A. P. WEBB, Atmore.

The following order has been revoked: *To Camp Sheridan, Ala.*, Lieut. O. E. WILSON, Birmingham.

Arizona

To Camp A. A. Humphreys, Va., from Hot Springs, N. C., Lieut. W. N. McDUFFIE, San Carlos.

Arkansas

To Camp Lee, Va., as orthopedic surgeon, from Army Medical School, Lieut. E. B. BUCHANAN, Texarkana.

To Camp MacArthur, Texas, base hospital, Capt. A. G. THIOLLIERE, Varner.

To Camp Zachary Taylor, Ky., base hospital, from Jefferson Barracks, Lieut. N. MUMEY, Little Rock.

To Fort Riley for instruction, Lieut. J. F. BELL, Rison.

To Fort Screven, Ga., from Southeastern Department, Lieut. E. S. BAKER, Paragould.

To Washington, D. C., Surgeon-General's Office, from Camp Pike, Col. J. T. CLARKE.

California

To Camp Beauregard, La., evacuation hospital, from Camp Fremont, Capt. B. F. MILLER, Whittier; from Camp Logan, Major H. W. HORN, San Francisco.

To Camp Dix, N. J., from Lakewood, Capt. F. M. HILLYER, San Francisco.

To Camp Dodge, Iowa, evacuation hospital, from Camp Cody, Lieut. J. N. CHAIN, Eureka; from Fort McDowell, Lieut. E. W. MEYER, Patton.

To Camp Fremont, Calif., Lieut. A. M. THOMSON, Sonoma.

To Camp Gordon, Ga., base hospital, from Fort Oglethorpe, Lieut. J. R. SHEA, Los Angeles; from the Surgeon-General's Office, Capt. A. M. MEADS, Berkeley.

To Camp Kearney, Calif., base hospital, Capt. J. S. TREWHELLA, Montebello.

To Camp Lewis, Wash., base hospital, from Camp Fremont, Lieut. O. M. HARRAH, LaManda Park.

To Camp Shelby, Miss., evacuation hospital, from Camp Kearney, Capt. T. E. TILLMAN, San Francisco; Lieuts. P. N. SIMS, Calexico; E. H. HALL, Los Angeles; J. H. BREYER, Pasadena; J. S. COCHRAN, San Diego; W. T. McNEIL, Stockton.

To Camp Wadsworth, S. C., from Western Department, Lieut. M. B. FRACTMAN, San Francisco.

To Fort Sill, Okla., base hospital, from Camp Sheridan, Lieut. R. A. CARTER, Los Angeles.

To Leon Springs, Texas, from Camp Cody, Lieut. S. M. ATKINS, San Jose.

To Mineola, N. Y., Hazelhurst Field, for instruction, Lieut. C. E. HOLGATE, Los Angeles.

To Morrison, Va., from Lee Hall, Va., Lieut. W. B. THOMPSON, San Francisco.

To report to the commanding general, Western Department, from San Francisco, Lieut. E. R. COX, Los Angeles; from Vancouver Barracks, Major E. I. SWIFT, Fort McDowell.

To San Francisco, Calif., for observation and treatment, from Los Angeles, Lieut.-Col. W. E. PURVIANCE, Los Angeles. Letterman General Hospital, from Western Department, Lieut. J. I. BOYER, Los Angeles.

Canal Zone

To San Francisco, Calif., from Panama Canal Department, Col. W. H. WILSON.

Colorado

To Camp Greene, N. C., base hospital, Lieut. E. A. CORBIN, Denver.

To Camp Kearney, Calif., base hospital, Capt. J. R. ARNEILL, Denver.

To Camp MacArthur, Texas, from Nogales, Ariz., Capt. R. L. DRINKWATER, Denver.

To Camp McClellan, Ala., base hospital, from Fort Oglethorpe, Capt. H. W. WILCOX, Denver. Evacuation hospital, from Camp Travis, Lieut. J. D. DAVIES, Alamosa.

To Camp Pike, Ark., base hospital, from Fort Oglethorpe, Capt. T. L. A. SHAFFER, Salida.

To Camp Sherman, Ohio, evacuation hospital, from Camp Custer, Major J. C. EPLER, Pueblo.

To Camp Travis, Texas, as orthopedic surgeon from Fort Oglethorpe, Capt. GILLASPIE, Boulder.

To Camp Wheeler, Ga., evacuation hospital, from New Haven, Lieut.-Col. A. M. FORSTER, Colorado Springs.

To Denver, Colo., Capts. L. W. BORTREE, Colorado Springs; E. W. COLLINS, Denver.

To Fort Oglethorpe for instruction, Lieut. W. H. L. LEWIS, Hotchkiss.

To Fort Riley for instruction, Lieut. R. L. GLEASON, Wellington.

Connecticut

To Camp Hancock, Ga., evacuation hospital, from Fort McPherson, Lieut. J. A. HARTEN, New Haven.

To Camp Jackson, S. C., base hospital, from Camp Sherman, Lieut.-Col. L. I. MASON, Willimantic.

To Fort Riley, base hospital, from Fort Oglethorpe, Lieut. J. H. BIRAM, Hartford.

To New Haven, Conn., Lieut. H. W. BRAYTON, Hartford.

To Waco, Texas, Rich Field, from Mineola, Lieut. J. D. RUSSO, New Haven.

To Whipple Barracks, Ariz., from New Haven, Capt. F. J. RONAYNE, Hartford.

District of Columbia

To Camp Custer, Mich., as orthopedic surgeon, from Camp Devens, Capt. H. L. SCHURMEIER, Washington.

To Camp Dodge, Iowa, evacuation hospital, from Walter Reed General Hospital, Capt. W. H. HUNTINGTON, Washington.

To Camp Gordon, Ga., as camp surgeon, from Central Department, Col. F. T. WOODBURY.

To Camp McClellan, Ala., from Fort Oglethorpe, Lieut. M. J. HERSCHMAN, Washington. Evacuation hospital, from Fort McPherson, Major J. F. MITCHELL, Washington.

To Camp Meade, Md., evacuation hospital, from the Surgeon-General's Office, Lieut.-Col. E. KING.

To Camp Sevier, S. C., from Camp Jackson, Major F. LEECH, Washington.

To Washington, D. C., St. Elizabeth's hospital, from Camp Devens, Capt. L. M. WHITE, Washington.

To Williamsbridge, N. Y., from Camp Jackson, Capt. H. L. HAYES, Washington.

Florida

To Atlanta, Ga., Capt. J. F. WILSON, Jr., Lakeland.

To Camp Lee, Va., base hospital, from Fort McHenry, Capt. A. N. FREEMAN, Starke.

To Camp MacArthur, Texas, base hospital, from Fort Oglethorpe, Lieut. O. G. KENDRICK, Tallahassee.

To Camp Sheridan, Ala., from Panama Canal Department, Capt. M. E. [illegible]

T[illegible] from Camp Joseph E. Johnston, Capt. S. R. M. [illegible]

To Lakewood, N. J., Lieut. A. J. WOOD, St. Petersburg.

Georgia

To Camp Beauregard, La., base hospital, from Camp Logan, Lieut. H. M. McGEHEE, Atlanta.

To Camp Dodge, Iowa, evacuation hospital, from New York, Capt. B. S. MOORE, Atlanta.

To Camp Gordon, Ga., base hospital, Capt. W. E. QUILLIAN, Atlanta; Lieut. T. G. RITCH, Odum.

To Camp Hancock, Ga., evacuation hospital, from Fort McPherson, Lieut. H. W. SHAW, Augusta.

To Camp Joseph E. Johnston, Fla., Lieut. G. G. WILLIFORD, Lenox.

To Camp Kelly, Texas, from Buffalo, Lieut. J. H. HERNDON, Atlanta.

To Camp Lee, Va., base hospital, from Fort Oglethorpe, Capt. R. M. WARE, Fitzgerald.

To Camp Shelby, Miss., evacuation hospital, from Fort Logan H. Roots, Lieut. B. H. MINCHEW, Waycross.

To Camp Wadsworth, S. C., evacuation hospital, from Fort Oglethorpe, Capt. E. D. HIGHSMITH, Atlanta.

To Camp Wheeler, Ga., Lieut. H. E. HAMMETT, LaGrange.

To Camp Zachary Taylor, Ky., base hospital, from Fort Oglethorpe, Lieut. F. P. NORMAN, Greenville.

To Cape May, N. J., Capt. D. B. FREDERICK, Marshallville.

To Fairfield, Ohio, Wilbur Wright Field, from Lonoke, Ark., Capt. C. R. RINER, Summit.

To Fort Benjamin Harrison, base hospital, from Army Medical School, Lieut. E. R. ANTHONY, Jr., Griffin.

To Fort Oglethorpe, from Camp Wheeler, Capt. T. H. STEWART, Atlanta. Base hospital, from Camp Joseph E. Johnston, Lieut. P. H. CHRISTIAN, Columbus. For instruction, Capt. I. H. ADAMS, Macon; Lieut. W. H. HENDRICKS, Tifton.

To Fort Wayne, Mich., from Lake Charles, La., Capt. J. M. SPENCE, Camilla.

To Lakewood, N. J., Capt. A. J. WARING, Savannah.

To New Haven, Conn., Yale Army Laboratory School, for instruction, Lieut. G. C. McKENZIE, Ashburn.

To St. Paul, Minn., Dunwoody Institute, from Columbus, Lieut. E. S. COLVIN, Atlanta.

Idaho

To Biltmore, N. C., for observation and treatment, from Waynesville, N. C., Lieut. C. WRIGHT, Fruitland.

To Camp MacArthur, Texas, as orthopedic surgeon, from Fort Oglethorpe, Lieut. J. R. YOUNG, Pocatello.

To Cooperstown, N. Y., from Mineola, Major F. H. POOLE, Pocatello.

To Fort Oglethorpe for instruction, Lieut. G. H. KENNET, Kellogg.

Illinois

To Camp Abraham Eustis, base hospital, from Fort Oglethorpe, Lieut. S. M. ROBERTS, Chicago.

To Camp Beauregard, La., base hospital, from Camp Sheridan, Lieut. A. THOMPSON, Chicago.

To Camp Cody, N. M., as tuberculosis examiner, from Camp Sheridan, Capt. E. S. GILLESPIE, Wenona.

To Camp Custer, Mich., as tuberculosis examiner, from Camp Greene, Lieut. A. S. CAMPBELL, Oak Forest. Base hospital, Lieut. J. T. MEYER, Chicago.

To Camp Devens, Mass., as orthopedic surgeons, and on completion *to Boston, Mass.*, Harvard Graduate School of Medicine, for instruction, from Fort Oglethorpe, Capts. W. F. McNARY, East St. Louis; J. J. BACON, Peoria. Base hospital, from Fort Oglethorpe, Lieut. G. L. McKINNEY, East Alton.

To Camp Dodge, Iowa, evacuation hospital, from Camp Pike, Lieut. J. D. McCULLOUGH, Jr., Aurora.

To Camp Fremont, Calif., from Camp Lewis, Lieut. F. J. SCHICK, Chicago.

To Camp Gordon, Ga., Lieut. F. H. YATES, St. Peter. Base hospital, Lieut. A. E. HUBBARD, Peoria; from Camp McClellan, Lieuts. A. H. CARTER, Chicago; J. A. De FREITAS, Springfield; from Camp Shelby, Lieut. M. S. HARMON, Chicago; from Camp Zachary Taylor, Lieut. T. V. DAGNAULT, Chicago.

To Camp Grant, Ill., Capt. H. T. MORRISON, Springfield.

To Camp Logan, Texas, base hospital, Lieut. O. W. SIMPSON, Peoria.

To Camp Meade, Md., from Fort Oglethorpe, Capt. T. C. HAYS, Canton.

To Camp Shelby, Miss., as orthopedic surgeon, from Fort Oglethorpe, Lieut. Y. JORDANSON, Chicago.

To Camp Sheridan, Ala., as orthopedic surgeon, from Fort Oglethorpe, Lieut. M. F. McGUIRE, Chicago.

To Camp Sherman, Ohio, from Camp Dodge, Lieut. J. HIGGINSON, Chicago; from Hoboken, Major J. F. PRESNELL, Chicago. Base hospital, from Central Department, Major J. R. McKNIGHT, Chicago. Evacuation hospital, from Camp Zachary Taylor, Capt. L. L. FRISQUE, Chicago; from New York, Lieut. F. M. SYLVESTER, Oak Park.

To Camp Upton, N. Y., from Buffalo, Lieut. A. T. WEBER, Chicago.

To Camp Wadsworth, S. C., as orthopedic surgeon, from Camp Grant, Lieut. M. J. KOSTRZEWSKI, Chicago. Evacuation hospital, from Camp Sevier, Capt. M. A. GIER, Chicago.

To Camp Wheeler, Ga., from Fort Riley, Capt. T. C. COGGSHALL, Henry; Lieut. W. P. CANNON, Kankakee. Evacuation hospital, from Camp MacArthur, Lieut. G. J. TORELL, Chicago; from Camp Upton, Capt. P. OLIVER, Chicago.

To Cape May, N. J., from New York, Capt. C. J. DAVIS, Deerfield.

To Chicago, Ill., as instructor in orthopedic surgery, from Fort Oglethorpe, Major J. RIDLON, Chicago.

To Fort Benjamin Harrison, from Fort Oglethorpe, Lieut. C. S. POWELL, Chicago; from Fort Riley, Major J. H. HESS, Chicago; from Jefferson Barracks, Lieut. E. H. DUFOUR, Chicago. Base hospital, from Fort Riley, Lieut. R. R. McCARTHY, Chicago.

To Fort Leavenworth, Kan., from Fort Riley, Capt. G. H. COTTRAL, Savanna.

To Fort Riley, Lieut. E. C. ROOS, Oak Park. Base hospital, from Camp Devens, Lieut. M. J. LATIMER, Chicago. For instruction, Lieuts. H. L. PETTITT, Morrison; F. D. HUBER, Pleasant Plains.

To Fort Snelling, Minn., base hospital, from Camp Grant, Lieut. W. J. RILEY, Chicago.

To Garden City, N. Y., Lieut. C. H. VEROVITZ, Chicago.

To Jefferson Barracks, Mo., base hospital, from Fort Riley, Capt. E. Z. LEVITIN, Peoria.

To Lakewood, N. J., Lieut. E. S. MELOY, Highland.

To Leon Springs, Texas, from Camp Cody, Lieut. W. H. ACKER, Chicago.

To Mineola, N. Y., Hazelhurst Field, for instruction, Lieut. S. M. MERWITZ, Chicago; from Lake Charles, La., Capt. F. CARY, Chicago.

To New Haven, Conn., Capt. A. H. BEEBE, Stillman Valley.

To report to the commanding general, Panama Canal Department, from Southern Department, Capt. W. E. HERVEY, Chicago.

The following order has been revoked: *To Camp Dodge, Iowa*, Capt. J. L. MANNING, Chicago.

Indiana

To Ann Arbor, Mich., University of Michigan, Lieut. G. H. McCASKEY, West Newton.

To Camp Abraham Eustis, Va., base hospital, from Camp Meade, Lieut. J. L. GLENDENING, Indianapolis.

To Camp Alfred Vail, N. J., Lieut. C. L. ROWELL, Valparaiso.

To Camp Beauregard, La., evacuation hospital, from Camp Wheeler, Capt. G. B. JACKSON, Indianapolis.

To Camp Dodge, Iowa, evacuation hospital, from Camp Custer, Capt. F. H. KELLY, Argos.

To Camp Gordon, Ga., base hospital, from Camp Shelby, Lieut. J. E. BRENNER, Winchester; from Fort Oglethorpe, Lieut. M. M. MORAN, Portland.

To Camp Greene, N. C., evacuation hospital, from Camp Hancock, Lieut. L. W. SMITH, Warren.

To Camp Jackson, S. C., base hospital, from Fort Oglethorpe, Capt. J. W. SHAFER, Lafayette.

To Camp McClellan, Ala., evacuation hospital, from Fort McPherson, Capt. H. C. WADSWORTH, Washington.

To Camp Meade, Md., from Fort Oglethorpe, Lieut. L. H. STAFFORD Indianapolis.

To Camp Newton D. Baker, Texas, base hospital, from Fort Riley, Lieut. B. R. KIRKLIN, Muncie.

To Camp Perry, Ohio, from Central Department, Major M. R. COMBS, Terre Haute.

To Camp Sherman, Ohio, to examine the command for nervous and mental diseases, Capt. F. W. TERFLINGER, Logansport.

To Camp Zachary Taylor, Ky., as orthopedic surgeon, from Fort Oglethorpe, Capt. J. B. YOUNG, Cumberland. Base hospital, from Army Medical School, Lieut. E. M. KIME, Indianapolis; from Fort Oglethorpe, Capt. A. L. BRAMKAMP, Richmond.

To Fort Oglethorpe for instruction, Capt. J. E. P. HOLLAND, Bloomington; Lieut. O. C. STEPHENS, Fort Branch.

To Garden City, N. Y., Lieut. P. J. COULTAS, Bristow.

To Hoboken, N. J., from New Haven, Lieut. F. P. HUNTER, Lafayette. Base hospital, from Fort Des Moines, Capt. J. C. GLACKMAN, Hatfield.

To Jefferson Barracks, Mo., base hospital, from Camp Upton, Capt. W. C. MOSS, Bunker Hill.

To Lakewood, N. J., Lieut. G. N. DRULEY, North Webster.

To Otisville, N. Y., from New Haven, Capt. M. L. SAMMS, Batesville.

Iowa

To Camp Custer, Mich., Capt. J. B. NAFTZGAR, Sioux City.

To Camp Dix, N. J., base hospital, from Fort Oglethorpe, Lieut. T. F. E. BESS, Fort Madison.

To Camp Dodge, Iowa, base hospital, Capt. G. L. PRENTICE, Troy.

To Camp Gordon, Ga., base hospital, from Camp McClellan, Lieut. C. W. TIDBALL, Independence.

To Camp Grant, Ill., evacuation hospital, from Army Medical School, Lieut. S. D. JONES, Fort Dodge.

To Camp Greene, N. C., from Garden City, Lieut. L. D. HUFF, Lenox.

To Camp Hancock, Ga., evacuation hospital, from Fort Oglethorpe, Lieut. C. E. CHENOWETH, Iowa City.

To Camp Jackson, S. C., base hospital, from Fort Oglethorpe, Major P. B. McLAUGHLIN, Sioux City.

To Camp McClellan, Ala., evacuation hospital, from Camp Shelby, Capt. W. C. NEWELL, Ottumwa.

To Camp Meade, Md., from the Surgeon-General's Office, Lieut. G. H. STEELE, Belmond.

To Camp Wadsworth, S. C., evacuation hospital, from Camp Sevier, Lieut. D. H. OSBORN, Monticello; from Southeastern Department, Capt. A. C. STRONG, Burlington.

To Camp Wheeler, Ga., as orthopedic surgeon, from Fort Oglethorpe, Lieut. H. L. von LACKUM, Iowa City.

To Jefferson Barracks, Mo., from Camp Dodge, Lieut. J. S. CALDWELL, Lenox.

To Fort Riley, base hospital, from Camp Travis, Lieut. L. D. McNAUGHTON, Eagle Grove.

To Fort Williams, Me., from Fort Riley, Lieut. M. N. GERNSEY, Waverly.

To Lakewood, N. J., Lieut. J. S. KNIPE, Armstrong.

To Washington, D. C., Surgeon-General's Office, from Camp Gordon, Capt. J. V. KEOGH, Dubuque.

The following order has been revoked: *To Rochester, Minn.*, Mayo Clinic, for instruction, and on completion *to his proper station*, from Camp Zachary Taylor, Lieut. A. E. ACHER, Fort Dodge.

Kansas

To Camp Beauregard, La., base hospital, from Camp Gordon, Lieut. L. D. MABIE, Kansas City. Evacuation hospital, from Camp Bowie, Lieut. A. L. KNISELY, Liberal; from Camp Cody, Capt. F. H. SLAYTON, Wichita.

To Camp Grant, Ill., to examine the command for nervous and mental diseases, Capt. F. A. CARMICHAEL, Osawatomie.

To Camp Logan, Texas, from Fort Riley, Capt. G. R. GAGE, Hutchinson.

To Camp Wheeler, Ga., from Fort Riley, Lieut. W. B. BURR, Longton. Evacuation hospital, from Camp Gordon, Lieut. J. H. HANSEN, Elkhart.

To Fort Riley, base hospital, Lieut. G. H. ALLEN, Topeka; from Camp Travis, Lieut. W. R. BRADY, Parsons. For instruction, Capt. D. I. MAGGARD, Wichita.

To Walter Reed General Hospital, D. C., for observation and treatment, Lieut. W. L. BUTLER, Stafford.

Kentucky

To Camp A. A. Humphreys, Va., from Hot Springs, N. C., Capt. B. K. MENEFEE, Covington.

To Camp Abraham Eustis, Va., base hospital, from Fort Oglethorpe, Lieut. H. H. RICHESON, Campbellsville.

To Camp Beauregard, La., base hospital, from Camp Sheridan, Capt. E. R. BUSH, Winchester.

To Camp Forrest, Ga., from Fort Oglethorpe, Capt. S. L. POTTINGER, Louisville.

To Camp Gordon, Ga., Lieut. J. P. WYLES, Cynthiana. Base hospital, Capt. A. V. MENEFEE, Williamstown; from Camp Zachary Taylor, Major V. N. MEDDIS, Louisville.

To Camp Greene, N. C., evacuation hospital, from Southern Department, Lieut. E. L. DRAVO, Jeffersontown.

To Camp Joseph E. Johnston, Fla., Lieuts. S. R. STITH, Ekron; J. F. MARRS, Tompkinsville.

To Camp MacArthur, Texas, base hospital, from Fort Oglethorpe, Capt. J. K. FREEMAN, Louisville.

To Camp Meade, Md., from Fort Oglethorpe, Lieuts. J. F. DUNCAN, Bowling Greene; H. LYON, Winchester.

To Camp Sevier, S. C., Capt. J. W. NOLAN, Harlan.

To Camp Wheeler, Ga., evacuation hospital, from Camp Hancock, Lieut. H. P. HONAKER, Horse Cave.

To Columbia, Ohio, from Camp Colt, Capt. J. M. MORRIS, Chestnutburg.

To Fort McDowell, Calif., from Camp Lewis, Lieut. U. G. DAVIS, Hopkinsville.

To Fort Meyer, Va., Lieut. E. D. TURNER, Cave City.

To Fort Oglethorpe for instruction, Lieut. W. J. FLOWERS, Columbia.

To Fort Omaha, Neb., base hospital, from Army Medical School, Lieut. S. J. SMOCK, Glasgow.

To New Cumberland, Pa., from Camp Gettysburg, Capt. H. LUTEN, Fulton.

Louisiana

To Camp A. A. Humphreys, Va., from Fort Oglethorpe, Capt. C. P. MUNDAY, Shreveport.

To Camp Gordon, Ga., base hospital, from Fort Oglethorpe, Lieut. M. F. MEYER, New Orleans.

To Camp Hancock, Ga., evacuation hospital, from Fort McPherson, Lieut. E. L. KING, New Orleans.

To Camp MacArthur, Texas, base hospital, from Fort Oglethorpe, Capt. S. L. WHITE, Ruston.

To Camp Shelby, Miss., base hospital Lieut. O. B. HICKS, Shreveport.

To Hoboken, N. J., from Fort Oglethorpe, Capt. T. REGAN, Shreveport.

To Rockefeller Institute for instruction in bacteriology, from Camp Joseph E. Johnston, Lieut. J. R. STAMPER, Caspiana.

Maine

To Fort Oglethorpe for instruction, Lieut. F. H. FREEMAN, Sangerville.

To New York, City College, from Fort Oglethorpe, Capt. L. M. HOWES, Bangor.

Maryland

To Camp A. A. Humphreys, Va., to examine the command for cardiovascular diseases, from Lakewood, Lieut. C. V. McMEEN, Baltimore.

To Camp Crane, Pa., from Fort Riley, Lieut. J. P. EIDSON, Baltimore.

To Camp Joseph E. Johnston, Fla., to examine the command for nervous and mental diseases, from Camp Pike, Capt. M. LEVY, Baltimore.

To Camp Lee, Va., base hospital, Lieut. A. A. PARKER, Pocomoke City. *To examine the command* for cardiovascular diseases, from Lakewood, Lieut. W. L. BROSIUS, Baltimore.

To Camp Meade, Md., as orthopedic surgeon, from Fort Oglethorpe, Lieut. C. C. NUOHE, Baltimore. On completion *to Boston, Mass.*, Harvard Graduate School of Medicine, for instruction, from Fort Oglethorpe, Lieut. G. R. MICKLETWAITE, Baltimore.

To Camp Pike, Ark., from Fort Oglethorpe, Lieut. C. S. LENTZ, Baltimore.

To Camp Sherman, Ohio, base hospital, from Camp Meade, Lieut. L. A. M. KRAUSE, Baltimore.

To Camp Wheeler, Ga., evacuation hospital, from Fort Oglethorpe, Lieut. W. M. HOLLYDAY, Baltimore.

To Fort Oglethorpe for instruction, Lieuts. R. C. DODSON, Rising Sun; C. H. THOMAS, Westminster.

To Plattsburg Barracks, N. Y., from Camp Jackson, Lieut. L. B. HOHMAN, Baltimore.

To Washington, D. C., St. Elizabeth's Hospital, for intensive training, Lieut. E. C. REITZEL, Baltimore.

The following order has been revoked: *To Rockefeller Institute* for instruction, and on completion *to Camp Upton, N. Y.*, base hospital, Lieut. F. E. ROBERTS, Baltimore.

Massachusetts

To Boston, Mass., from Cambridge, Lieut. E. F. W. BARTOL, Lancaster; from duty as a contract surgeon, Lieut. G. H. POIRIER, Boston.

To Camp Cody, N. M., base hospital, from Fort Oglethorpe, Lieut. T. H. KENNY, Northampton.

To Camp Crane, Pa., from Camp Devens, Capt. A. W. FAIRBANKS, Boston; from Fort Slocum, Lieut. C. E. RODERICK, Boston.

To Camp Custer, Mich., as tuberculosis examiner, from Camp Greene, Lieut. J. J. COSGROVE, Westfield.

To Camp Devens, Mass., base hospital, Lieut. E. J. GRAINGER, Winthrop; from Fort Oglethorpe, Lieut. A. R. GARDNER, Lowell.

To Camp Dix, N. J., from New Haven, Lieut. F. A. STANWOOD, Wellesley Hills, base hospital, from Fort Oglethorpe, Capt. G. H. HILL, Worcester.

To Camp Greene, N. C., as orthopedic surgeon, from Fort Oglethorpe, N. W. GILLESPIE, Boston.

To Camp Hancock, Ga., as orthopedic surgeon, from Fort Oglethorpe, Lieut. A. KLEIN, Boston.

To Camp Jackson, S. C., base hospital, Major F. R. JOUETT, Cambridge.

To Camp Joseph E. Johnston, Fla., as orthopedic surgeon, from Fort Oglethorpe, Lieut. M. A. GILBERT, Chelsea.

To Camp MacArthur, Texas, base hospital, from Fort Oglethorpe, Capt. J. H. DEWEES, Boston.

To Camp McClellan, Ala., as orthopedic surgeon, and on completion *to Boston, Mass.*, Harvard Graduate School of Medicine, for instruction, from Fort Oglethorpe, Lieut. S. L. MARNOY, Chelsea.

To Camp Meade, Md., from Fort Riley, Major I. T. CUTTER, Winchester.

To Camp Sheridan, Ala., as orthopedic surgeon, from Fort Oglethorpe, Lieut. J. M. GILCHRIST, Springfield.

To Camp Sherman, Ohio, from Hoboken, Lieut. H. H. SUMNER, Lowell.

To Camp Wadsworth, S. C., evacuation hospital, from Camp Sevier, Lieut. M. P. MAHONEY, Lowell.

To Camp Wheeler, Ga., base hospital, Lieut. E. A. KNOWLTON, Holyoke. Evacuation hospital, from Camp Joseph E. Johnston, Lieut. F. S. CALDICOTT, Milford.

To Camp Zachary Taylor, Ky., base hospital, from Fort Oglethorpe, Lieut. C. C. PARKER, Jr., Roxbury.

To Fort Benjamin Harrison, from Fort Oglethorpe, Capt. W. G. TURNER, Fall River. Base hospital, from Fort Oglethorpe, Lieut. C. L. HOITT, Lynn.

To Fort Oglethorpe for instruction, Lieut. L. H. ROCKWELL, Boston.

To Fort Snelling, Minn., base hospital, from Camp Grant, Capt. H. CARO, Chelsea.

To Fort Thomas, Ky., from Camp Upton, Lieut. H. M. STEWART, Pittsfield.

To Jefferson Barracks, Mo., base hospital, from Hoboken, Lieut. F. H. COFFIN, Haverhill.

To Lakewood, N. J., Capt. J. A. COCONI, Dorchester; from Camp Dix, Capt. G. M. ALBEE, Worcester.

To New Cumberland, Pa., Lieut. P. D. BLANCHARD, Lowell.

To report to the governor of Massachusetts for duty as medical aide, from Boston, Lieut. F. G. WHEATLEY, North Abington.

To Walter Reed General Hospital, D. C., Lieut. E. A. KNOWLTON, Holyoke; from Fort Oglethorpe, Lieuts. E. P. RUGGLES, A. D. VAMVAS, Boston.

To Washington, D. C., St. Elizabeth's Hospital, from Camp Custer, Lieut. J. L. McAUSLAN, Gardner.

Michigan

To Camp Beauregard, La., evacuation hospital, from Corpus Christi, Texas, Lieut. B. FRIEDLANDER, Saginaw.

To Camp Crane, Pa., from Camp Travis, Lieut. G. H. BAHLMAN, Flint.

To Camp Dix, N. J., as orthopedic surgeon, and on completion *to Boston, Mass.*, Harvard Graduate School of Medicine, for instruction, from Fort Oglethorpe, Lieut. R. S. CRON, Ann Arbor.

To Camp Grant, Ill., Lieut. L. L. YOUNGQUIST, Marquette.

To Camp Shelby, Miss., evacuation hospital, from Camp Dix, Capt. J. P. PRATT, Detroit; from Camp Dodge, Capt. R. D. McCLURE, Detroit.

To Camp Sherman, Ohio, evacuation hospital, from Camp Custer, Capt. S. V. BARNUM, Coloma.

To Dayton, Ohio, McCook Field, from Farifield, Ohio, Capt. J. I. FROUDE, Detroit.

To Fort Douglas, Utah; Lieut. W. J. LOVERING, Detroit.

To Fort Riley, base hospital, from Camp Pike, Lieut. C. P. CLARK, Flint.

To New York City, neurological institute, for instruction, Capt. H. A. LUCE, Detroit.

To West Point, Miss., Payne Field, from Fort Oglethorpe, Lieut. D. A. COHOE, Detroit.

The following order has been revoked: *To Hoboken, N. J.*, from Camp Sherman, Capt. R. BEATTIE, Detroit.

Minnesota

To Camp Beauregard, La., base hospital, from Camp A. A. Humphreys, Lieut. W. H. HALLORAN, St. Paul.

To Camp Custer, Mich., base hospital, from New York, Capt. U. V. PORTMANN, Jackson.

To Camp Dix, N. J., base hospital, Capt. F. W. BRIGGS, Moorhead.

To Camp Grant, Ill., Capt. C. L. GREENE, St. Paul.

To Camp Jackson, S. C., as orthopedic surgeon, from Fort Oglethorpe, Lieut. B. T. BOTTELFSON, Halstad.

To Camp Meade, Md., from Camp Lee, Major J. C. SESSIONS, Minneapolis.

To Camp Sherman, Ohio, evacuation hospital, from Camp Custer, Capt. A. F. MOYNIHAN, Sauk Centre; from Camp Custer, Lieut. G. C. ROSKILLY, Deer Creek; from Camp Dodge, Lieut. F. N. KNAPP, St. Paul.

To Camp Zachary Taylor, Ky., base hospital, from Fort Oglethorpe, Lieut. H. OERTING, Minneapolis.

To Fort Douglas, Utah, from Camp Dodge, Lieut. W. J. McKILLIP, Duluth; from Fort Oglethorpe, Lieut. A. W. DREW, Swainville.

To Fort Riley, base hospital, from Camp Dodge, Capt. W. W. LEWIS, St. Paul.

To Fort Screven, Ga., from Fort Oglethorpe, Lieut. J. R. NANNESTAD, Albert Lea.

To New Haven, Conn., for observation and treatment, from Fort McHenry, Lieut. H. C. BUMPUS, Jr., Rochester.

Mississippi

To Camp Gordon, Ga., Lieut. V. M. CROTHERS, Lambert. Base hospital, Lieut. J. L. NICHOLS, Alligator.

To Camp John Wise, Texas, from West Point, Miss., Lieut. W. T. WATSON, Banner.

To Camp McArthur, Texas, from Nogales, Ariz., Major J. C. BALLARD, Biloxi.

To Camp Wadsworth, S. C., evacuation hospital, from Camp Sevier, Capt. M. C. GARNER, Meridian.

To Fort McPherson, Ga., from Fort Oglethorpe, Capt. R. M. BUTLER, Jackson.

To Fort Oglethorpe for instruction, Lieut. M. TATE, Meridian.

The following order has been revoked: *To Camp Lewis, Wash.*, base hospital, Lieut. R. L. BEADLES, Coffeeville.

Missouri

To Camp A. A. Humphreys, Va., from Fort Oglethorpe, Lieut. J. D. MOULDER, Linn Creek.

To Camp Beauregard, La., base hospital, from Camp Logan, Lieut. J. R. RANSON, St. Louis; from Camp Sheridan, Capt. J. C. BOONE, Charleston; from Fort Oglethorpe, Capt. R. E. WOBUS, St. Louis; Lieut. R. H. UNDERWOOD, Kansas City; from Fort Riley, Capt. C. MARTIN, St. Louis.

To Camp Dodge, Iowa, base hospital, Major M. A. GOLDSTEIN, St. Louis; Lieuts. H. B. PRYOR, Ashland; G. W. GAINES, Knoxville; J. C. POTTER, St. Louis.

To Camp Gordon, Ga., base hospital, Capt. L. H. BEHRENS, St. Louis; Lieuts. H. A. ELKINS, Hardin; R. H. MILLIGAN, Kearney.

To Camp Hancock, Ga., evacuation hospital, from Fort McPherson, Capt. W. P. GLENNON, St. Louis.

To Camp Logan, Texas, from Fort Riley, Lieut. J. H. STAPP, Hardin.

To Camp Sevier, S. C., base hospital, from Camp Greene, Lieut. C. H. SHUMAKER, St. Louis.

To Camp Shelby, Miss., from Fort Oglethorpe, Capt. R. H. MORRIS, Kansas City.

To Camp Travis, Texas, base hospital, Capt. H. C. CREVELING, St. Louis.

To Camp Wadsworth, S. C., from Fort Riley, Lieut. D. L. GOLDBERG, St. Louis. Evacuation hospital, from Camp Jackson, Lieut. U. S. SHORT, St. Louis.

To Camp Wheeler, Ga., from Fort Riley, Capt. W. K. STATLER, Oak Ridge; Lieut. E. F. HIGDON, St. Joseph.

To Charleston, S. C., from Camp Bowie, Capt. R. F. MILLS, Odessa.

To Denver, Colo., from Fort Riley, Capt. S. R. JOHNSON, St. Charles.

To Fort Leavenworth, Kan., from Fort Riley, Capt. J. F. GRACE, Excelsior Springs.

To Fort Oglethorpe for instruction, Capts. J. E. BAIRD, Excelsior Springs; W. C. GAYLOR, Lieut. A. A. MARGULIS, St. Louis.

To Fort Riley for instruction, Capts. D. E. BLACKLOCK, King City; H. G. FARME, Mountain Grove; Lieuts. G. O. WILHITE, Centertown; E. D. JAMES, Joplin; R. F. VIEHOE, St. Louis.

To Fort Sill, Okla., from Camp Perry, Major F. W. SHAW, Mount Vernon.

To Fort Wayne, Mich., from Montgomery, Ala., Lieut. D. B. HAWORTH, Kansas City.

To Lonoke, Ark., Eberts Field, from Camp McClellan, Lieut. B. J. WIESNER, St. Louis.

To New Haven, Conn., Yale Army Laboratory School, for instruction, Capt. R. H. MAJOR, Liberty.

Montana

To Fort Oglethorpe for instruction, Lieut. C. S. KOUTZ, Havre.

The following order has been revoked: *To Rochester, Minn.*, Mayo Clinic, for instruction, and on completion *to his proper station, Lieut.* J. J. TOBINSKI, Missoula.

Nebraska

To Aberdeen, Md., from Fort Oglethorpe, Capt. J. A. TROWBRIDGE, Superior.

To Camp Hancock, Ga., evacuation hospital, from Camp Pike, Capt. H. A. JOHNSON, Tekamah.

To Camp Kearney, Calif., from Western Department, Lieut. O. P. SCHNETSKY, Schuyler.

To Fort D. A. Russell, Wyo., Capt. J. H. PLUMB, York.

To Hoboken, N. J., from New Haven, Lieut. W. C. BECKER, Papillion.

To Washington; D. C., St. Elizabeth's Hospital, Capt. S. J. STEWART, Hastings.

New Hampshire

To Camp Dix, N. J., as orthopedic surgeon, and on completion *to Boston, Mass.*, Harvard Graduate School of Medicine, for instruction, from Fort Oglethorpe, Lieut. E. A. JONES, Manchester.

To Camp Lee, Va., base hospital, from Fort Oglethorpe, Lieut. A. BORLAND, Meredith.

To Camp Zachary Taylor, Ky., base hospital, from Fort Oglethorpe, Lieut. A. F. MULVANITY, Nashua.

To Fort Sill, Okla., from Fort Oglethorpe, Capt. N. E. GUILLET, Manchester.

New Jersey

To Arcadia, Fla., Carlstrom Field, from Mineola, Lieut. J. W. HURFF, Newark.

To Camp Fremont, Calif., as tuberculosis examiner, from Camp Kearney, Major R. BEW, Atlantic City.

To Camp Hancock, Ga., base hospital, from Camp Bowie, Major G. C. ALBEES, South Orange.

To Camp Lee, Va., from Southern Department, Major C. E. MACDONALD, Salem. Base hospital, Lieut. H. H. JOHNSTON, Jersey City.

To Camp Meade, Md., to examine the command for nervous and mental diseases, Lieut. E. B. FUNKHOUSER, Trenton.

To Camp Wadsworth, S. C., evacuation hospital, from Camp Hancock, Lieut. E. L. MINARD, East Orange.

To Camp Wheeler, Ga., base hospital, from Fort Oglethorpe, Capt. W. J. ARLITZ, Hoboken.

To Fort Oglethorpe, as instructor, from Camp MacArthur, Capt. G. THORBURN, Newark.

To Fort Riley, base hospital, from New York, Lieut. A. L. L. BELL, Englewood.

To Mineola, N. Y., Hazelhurst Field, for instruction, *from* Camp Gordon, Lieut. J. S. VANNEMAN, Princeton.

To Syracuse, N. Y., from Camp Dix, Lieut. J. WECHSLER, Jersey City.

To Walter Reed General Hospital, D. C., from Fort Oglethorpe, Lieut. W. A. TANSEY, Newark.

To Williamsbridge, N. Y., from Fort Oglethorpe, Lieut. E. W. SMITH, Passaic.

New Mexico

To Fort Leavenworth, Kan., from Fort Riley, Lieut. C. E. KINDALL, Hurley.

New York

To Biltmore, N. C., from Camp Travis, Capt. D. S. CHILDS, Syracuse.

To Boston, Mass., Harvard Graduate School of Medicine, for instruction, *from* Camp Lee, Lieut. H. F. MORRISON, Tuxedo, Park; from Newport News, Lieut. H. T. BLAIR, Brooklyn.

To Camp A. A. Humphreys, Va., from Camp Wheeler, Major L. D. McEVOY, New York.

To Camp Abraham Eustis, Va., base hospital, from Camp Meade, Lieut. J. GRABENSTEIN, New York.

To Camp Alfred Vail, N. J., from New York, Capt. J. R. FARRELL, New York.

To Camp Beauregard. La., base hospital, from Camp Hancock, Capt. G. PRIESTMAN, Willard; from Camp Wadsworth, Lieut. H. W. KEMP, Brooklyn.

To Camp Crane, Pa., *from Camp Dix,* Lieut. C. H. BRUSH, Kings Park; from Camp Wheeler, Lieut. J. M. O'NEILL, Flushing.

To Camp Custer, Mich., base hospital, from New York, Lieuts. I. H. PARDEE, A. A. RAYLE, New York.

To Camp Dix, N. J., Lieut. P. B. BREGMAN, New York. Base hospital, from Syracuse, Lieut. B. C. HAMILTON, Goshen.

To Camp Dodge, Iowa, evacuation hospital, from Camp Meade, Capt. W. S. SMITH, Brooklyn; from *Fort McHenry*, Capts. H. R. CHARLTON, Bronxville; W. S. WOODRUFF, Mount Vernon; from Fort Oglethorpe, Capt. E. K. TANNER, Brooklyn; from the Surgeon-General's Office, Major J. E. JENNINGS, Brooklyn.

To Camp Fremont, Calif., base hospital, from Camp Lewis, Lieut. A. G. DE SANCTIS, New York.

To Camp Gordon, Ga., base hospital, from Camp Wadsworth, Lieut. J. E. NOLL, New York; from Fort *Oglethorpe*, Lieut. I. E. LISS, New York.

To Camp Greene, N. C., from Garden City, *Major* A. M. CACCINI, New York. Base hospital, from Camp Lee, Lieut. B. P. BROWN, Brooklyn; from Fort Oglethorpe, Lieut. D. D. KRUPP, Brooklyn.

To Camp Hancock. Ga., evacuation hospital, from Fort McPherson, Lieuts. H. M. BULLARD, Brooklyn; J. F. McGOVERN, New York.

To Camp Jackson, S. C., base hospital, from Fort Oglethorpe, Lieut. P. W. SKLADZIEN, Brooklyn.

To Camp Logan, Texas, base hospital, from Hoboken, Major J. B. CLARK, New York.

To Camp MacArthur, Texas. base hospital, from Fort Oglethorpe, Lieut. G. FREIMAN, Brooklyn.

To Camp McClellan, Ala., evacuation hospital, from Biltmore, N. C., Lieut. O. C. PICKHARDT. New York; from Camp Shelby, Capt. F. PALMER, Glens Falls; from Fort Oglethorpe, Lieut. S. S. ARLUCK.

To Camp Meade, Md., base hospital, Capt. H. N. RATLIFF, New York. *To examine the command* for cardiovascular diseases, *from* Camp A. A. Humphreys, Lieut. D. SCHULTHEIS, New York.

To Camp Pike, Ark., evacuation *hospital*, from Camp Travis, *Lieut.* A. B. DYKMAN, Riverdale.

To Camp Sevier, S. C., base hospital, from Fort Oglethorpe, Capt. J. L. BENDELL, Albany.

To Camp Shelby, Miss., as orthopedic surgeon, from Fort Oglethorpe, Lieut. E. E. VANDERWERKER, New York. Base *hospital*, *from* Army Medical School, Lieut. H. A. PATTERSON, Buffalo.

To Camp Sheridan, Ala., as orthopedic surgeon, from Fort Oglethorpe, Lieut. L. FASKE, Brooklyn. Base hospital, from Fort Oglethorpe, Lieut. S. S. FRIEDMAN, New York.

To Camp Sherman, Ohio, evacuation hospital, from Camp Custer, Lieut. W. C. HANNON, New York; from Camp Zachary Taylor, Major L. M. KAHN, New York; *from Fort Oglethorpe*, Capt. A. D. YOUNG, Mayville; from Fort Ontario, Major J. F. WHITE, Port *Chester*.

To Camp Travis, Texas, as orthopedic surgeon, from Fort Oglethorpe, Capt. D. C. PATERSON, Yonkers.

To Camp Upton, N. Y., from Buffalo, Lieut. W. H. ORDWAY, New York.

To Camp Wadsworth, S. C., from Fort Oglethorpe, Lieut. R. B. ERNEST, Jr., New York. Evacuation hospital, from Camp Sevier, Capt. T. A. KENYON, New York; Lieut. D. V. CATALANO, Staten Island; from Columbus Barracks, Lieut. R. V. M. HADLEY, Collins; from Fort Oglethorpe, Lieut. T. F. BERBEROVICH, New York.

To Camp Wheeler, Ga., from Fort Oglethorpe, Capt. E. W. AYERS, Alfred.

To Fort Douglas, Utah, from Fort Oglethorpe, Lieuts. A. E. GORDIN, S. M. HYMAN, New York.

To Fort Niagara, N. Y., Capt. N. B. FORD, Owasco.

To Fort Oglethorpe, as instructor, Lieut. C. A. WATERS, New York. For instruction, Lieuts. W. O. HILL, Buffalo; J. M. BERNHARD, New York; from Camp Forrest, Lieut. G. C. BARONE, Buffalo.

To Fort Ontario, N. Y., from Fairfield, Ohio, Lieut. S. TRIPLER, New York; *from Fort Oglethorpe*, Capt. A. F. GRIFFITHS, Brooklyn.

To Fort Riley, base hospital, from Camp Grant, Capt. J. M. KEYES, New York; from Fort Oglethorpe, Lieut. H. OSTROWSKY, New York.

To Fort Sam Houston, Texas, base hospital, from San Antonio, Lieut. R. J. WHARTON, Brooklyn.

To Fort Thomas, Ky., from Camp Upton, Capt. D. R. ROBERT, Brooklyn.

To Garden City, N. Y., from Lonoke, Lieut. P. L. HELMICK, New York; *from Mineola*, Capt. F. L. SENGER, *Brooklyn*.

To Lakewood, N. J., Lieuts. L. A. BINGAMAN, New York; C. E. TUBB, Poughkeepsie. For instruction and on completion *to Camp Sevier, S. C., to examine the troops* for cardiovascular diseases, from Camp Lee, Capt. J. B. ZABRISKIE, Brooklyn.

To Lee Hall, Va., from St. Paul, Capt. R. GRACE, La Grangeville.

To Mineola, N. Y., Hazelhurst Field, from Dayton, Ohio, Capt. G. M. CLOWE, Schenectady. For instruction, from Lee Hall, Capt. E. L. HAZELTINE, Jamestown.

To New York, Academy of Medicine, from Eastern Department, Major W. T. HELMUTH, New York.

To report to the commanding general, Panama Canal Department, from Camp Upton, Lieut. M. A. RAMIREZ, New York. Philippine Department, from New York, Major F. J. EISENMAN, *New York*.

To Rockefeller Institute, Lieut. P. K. OLITSKY, New York.

To Syracuse, N. Y., Capt. MALCOLM CAMPBELL, New York; from Camp Dix, Capt. G. W. BEATTY, Brooklyn.

To Waco, Texas, Rich Field, from Mineola, Lieut. W. E. GAZELEY, Albany.

To Washington, D. C., Surgeon-General's Office, from Syracuse, N. Y., Major C. R. CASTLEN.

Honorably discharged on account of physical disability incurred in line of duty, Lieut. I. C. WHITEHEAD, Hoosick.

North Carolina

To Camp Hancock, Ga., evacuation hospital, from Fort McPherson, Capt. C. T. GRIER, Carthage.

To Camp McClellan, Ala., from Fort Oglethorpe, Capt. C. O. ABERNETHY, Raleigh.

To Camp Sevier, S. C., base hospital, Lieut. J. R. SPENCER, South Mills.

To Fort Jay, N. Y., Capt. M. B. ABERNETHY, Reidsville.

To Fort Oglethorpe, Major E. C. BOYETTE, Charlotte. For instruction, Lieut. R. C. RAY, Beaver Creek.

To Rockefeller Institute for instruction in the treatment of infected wounds, and on completion *to Garden City, N. Y.*, Capt. A. W. MOORE, Charlotte.

Honorably discharged on account of physical disability existing prior to entrance into the service, Lieut. H. ROBINSON, Reidsville.

North Dakota

To Camp Joseph E. Johnston, Fla., as orthopedic surgeon, *from* Fort Oglethorpe, Lieut. L. F. FISHER, Grand Forks.

To Fort Benjamin Harrison, from Camp Zachary Taylor, Lieut. L. G. DUNLAP, Bismarck.

To Fort Riley for instruction, Capt. J. W. COX, Grand Forks.

Ohio

To Camp A. A. Humphreys, Va.. from Camp *Perry,* Lieut. T. WALKUP, Dayton.

To Camp Abraham Eustis, Va., Lieut. F. McLEISH STRATTON, Pioneer.

To Camp Beauregard, La., base hospital, from Camp Joseph E. Johnston, Lieut. C. C. PATTON, Ashland; *from* Camp Wheeler, Lieut. L. A. OSTER, Cleveland.

To Camp Dodge, Iowa, base hospital, from *Fort Oglethorpe,* Lieut. E. C. MYLOTT, Cleveland.

To Camp Gordon, Ga., base hospital, from Camp McClellan, Capt. F. W. HITCHINGS, Cleveland; from *New York, Lieut.* L. R. COURTRIGHT, Dayton.

To Camp Grant, Ill., Lieuts. J. E. SPRINGER, Akron; H. F. BURMAN, Toledo.

To Camp Hancock, Ga., evacuation hospital, from Fort McPherson, Major F. FLETCHER, Columbus.

To Camp Holabird, Md., from Camp Colt, Major R. W. DE CROW, Newark.

To Camp Kelly, Texas, from Dayton, Ohio, Capt. M. C. PHILLIPS, Fremont.

To Camp MacArthur, Texas, as orthopedic surgeon, from Fort Oglethorpe, Lieut. E. H. HAYMAN, Murray. Base hospital, Capt. C. S. MANSS, Cincinnati.

To Camp Meade, Md., from Fort Oglethorpe, Lieut. C. R. JOHNSON, Cambridge; from Fort Riley, Capt. E. H. MORGAN, Gallipolis.

To Camp Sevier, S. C., Lieut. H. H. TALBOTT, Steubenville. Base hospital, from Fort Oglethorpe, Capt. H. B. DORNBLASSER, Springfield.

To Camp Upton, N. Y., as orthopedic surgeon, and on completion *to Boston, Mass.*, Harvard Graduate School of Medicine, for instruction, from Fort Oglethorpe, Capt. J. R. TILLOTSON, Delphos.

To Camp Zachary Taylor, Ky., base hospital, from Fort Oglethorpe, Lieut. M. C. HOUSTON, Urbana.

To Fort Oglethorpe for instruction, Lieut. J. D. WENDER, Dayton.

To Fort Snelling, Minn., from Fort Oglethorpe, Lieut. C. R. FISHEL, Thurston.

To Garden City, N. Y., from Lake Charles, La., Lieut. J. G. MARTIN, New Concord.

To Hoboken, N. J., from Camp Perry, Lieut. G. R. WILKINS, Cleveland; from Fort Oglethorpe, Capt. H. J. HERRICK, Hudson.

To West Point, Miss., Payne Field, from Camp Kelly, Lieut. J. M. PUMPHREY, Mount Vernon.

The following orders have been revoked: *To Army Medical School* for instruction, from Garden City, Lieut. D. M. MACDONALD, Cleveland. *To Camp A. A. Humphreys, Va.*, Capt. F. J. WOOD, Cleveland.

Oklahoma

To Camp Beauregard, La., base hospital, from Camp Logan, Capt. J. H. MAXWELL, Oklahoma City; Lieut. J. B. LEISURE, Watonga.

To Camp Devens, Mass., from Camp Lee, Major W. E. HARRINGTON, Wakita.

To Camp Gordon, Ga., base hospital, from Southern Department, Lieut. W. P. SIMS, Drumright.

To Camp MacArthur, Texas, base hospital, Capt. E. F. DAVIS, Oklahoma City.

To Camp Meade, Md., from Fort Oglethorpe, Lieut. R. A. DOUGLAS, Tulsa.

To Fort Douglas, Utah, from Fort Snelling, Capt. F. M. SANGER, Oklahoma City.

To Hot Springs, Ark., from Camp Pike, Lieut. J. W. PENDLETON, Kingfisher.

To Morrison, Va., from Lee Hall, Lieut. J. R. WALTRIP, Kinta.

To Washington, D. C., St. Elizabeth's Hospital, for intensive training, from Camp Wadsworth, Lieut. R. K. GODDARD, Supply.

Oregon

To Camp Cody, N. M., base hospital, from Fort Oglethorpe, Lieut. F. E. BUTLER, Hot Lake.

To Camp Dodge, Iowa, from Fort Des Moines, Lieut. R. F. JAMES, Portland.

To Camp Fremont, Calif., Lieut. R. E. SCHMIDT, Rainier.

To Camp Hancock, Ga., base hospital, from Fort Oglethorpe, Lieut. J. H. GARNJOBST, Salem.

To Camp Jackson, S. C. base hospital, from Army Medical School, Capt. W. H. NORTON, Portland.

Pennsylvania

To Arcadia, Fla., Carlstrom Field, from Mineola, Lieut. H. F. LANSHE, Allentown.

To Boston, Mass., Harvard Graduate School of Medicine, for instruction, from Camp Lee, Lieut. C. N. SILMAN, Pittsburgh

To Camp. A. A. Humphreys, Va., Capt. S. H. HELLER, Lancaster.

To Camp Abraham Eustis, Va., base hospital, from Camp Lee, Lieuts. A. ROZPLOCH, Chester; J. M. STEWART, Marion Center; from Fort Oglethorpe, Capt. J. H. ARNETT, Philadelphia.

To Camp Bowie, Texas. base hospital. Lieut. M. S. ERSNER, Philadelphia.

To Camp Crane, Pa., from Baltimore, Lieut. E. P. DICKINSON, St. Michael.

To Camp Custer, Mich., base hospital, from Camp Dix, Lieut. T. L. McCULLOUGH, Homewood.

To Camp Dix, N. J., Capt. J. M. TIMMONS, West Alexandria.

To Camp Dodge, Iowa, base hospital, from New York, Lieut. C. D. FOX, Cynwood.

To Camp Gordon, Ga., base hospital, from Fort Oglethorpe, Lieut. C. W. McELHANEY, Greenville.

To Camp Greene, N. C., base hospital, from Fort Oglethorpe, Lieut. C. M. THOMAS, Carrick.

To Camp Hancock, Ga., evacuation hospital, from Camp Dix, Capt. G. W. STIMSON, Pittsburgh; from Fort Oglethorpe, Lieut. E. J. STEIN, Lancaster.

To Camp Jackson, S. C., base hospital, Major K. A. EMMERLING, Pittsburgh.

To Camp MacArthur, Texas, base hospital, from Fort Oglethorpe, Lieut. R. J. HAWS, Reading.

To Camp McClellan, Ala., evacuation hospital, from Camp Wheeler, Lieut. C. C. GANS, Chambersburg.

To Camp Pike, Ark., base hospital, from Camp Dix, Major A. J. SMITH, Philadelphia.

To Camp Shelby, Miss., evacuation hospital, from Camp Meade, Capt. H. H. LOTT, Philadelphia.

To Camp Travis, Texas, base hospital, from Fort Bayard, Capt. G. P. PILLING, Philadelphia.

To Camp Wadsworth, S. C., evacuation hospital, from Camp Sevier, Major C. M. LUMAN, Uniontown; Lieut. J. H. HAMILL, Legonier; from Fort Oglethorpe, Lieut. R. H. PEARLMAN, Pittsburgh.

To Camp Wheeler, Ga., evacuation hospital, from Fort McPherson, Lieut. J. LEEDOM, Philadelphia.

To Camp Zachary Taylor, Ky., base hospital, from Camp Pike, Lieut. G. R. LACY, Pittsburgh.

To Cape May, N. J., from Fort McPherson, Capt. S. D. INGHAM, Philadelphia.

To Carlisle, Pa., from Fort Oglethorpe, Capt. N. G. L. SHILLITO, Pittsburgh.

To Fort Douglas, Utah, from Camp Dodge, Capt. H. A. SPANGLER, Carlisle.

To Fort Oglethorpe for instruction, Lieut. O. R. KLINE, Philadelphia. *To examine the command* for nervous and mental diseases, Lieut. W. C. CHANEY, Philadelphia.

To Hoboken, N. J., from Walter Reed General Hospital, Lieut. E. B. SLOTERBECK, Monessen. Base hospital, from Walter Reed General Hospital, Lieut. E. PARDOW, South Fork.

To Lakewood, N. J., Lieut. J. G. FLYNN, Ridgway; from Camp Dix, Capt. J. T. MADDEN, Pittston.

To Mineola, N. Y., for instruction, from Garden City, Lieut. W. C. SMITH, Woodbine. Hazelhurst Field, from Washington, D. C., Capt. G. W. SMELTZ, Markleton.

To New Haven, Conn., Lieut. W. C. JOHNSON, Philadelphia.

To Syracuse, N. Y., from Fort Oglethorpe Lieut. G. R. PRETZ, Lebanon. *To examine the command* for nervous and mental diseases, from Fort Ontario, Lieut. J. E. DWYER, Polk.

To Walter Reed General Hospital, from Fort Oglethorpe, Lieut. W. C. REESE, Wilkes-Barre.

To Washinton, D. C., from Camp Wheeler, Lieut. C. R. HUGHES, Philadelphia. Surgeon General's Office, from Camp A. A. Humphreys, Capt. S. L. GANS, Philadelphia.

To West Point, Miss., Payne Field, from Camp Hancock, Lieut. R. PAINE, Philadelphia.

Porto Rico

To Camp Las Casas, P. R., from Rockefeller Institute, Lieut. L. A. SALIVA, Rio Piedras.

South Carolina

To Camp Beauregard, La., base hospital, from Camp Sheridan, Lieut. M. WEINBERG, Sumter.

To Camp Gordon, Ga., Lieut. M. L. LANFORD, Greer.

To Camp Hancock, Ga., base hospital, from Fort Oglethorpe, Capt. A. P. McELROY, Union.

To Camp Lee, Va., Lieut. I. M. GAGE, Columbia.

To Camp Logan, Texas, from Fort Riley, Lieut. J. H. MILLS. Maynesville.

To Camp Sheridan, Ala., base hospital, from Philadelphia, Lieut. R. N. DAVIS, Troy.

To Fort Oglethorpe for instruction, Capt. S. C. ZEMP, Camden.

To Fort Riley, base hospital, from Fort Oglethorpe, Lieut. R. T. FERGUSON, Gaffney

To Otisville, N. Y., from New Haven, Capt. H. B. MALONE, Chester.

South Dakota

To Camp Greene, S. C., from Garden City, Lieut. D. D. RABER, Buffalo.

To Camp Meade, Md., from Fort Riley, Capt. H. C. PARSONS, Watertown.

To Fort Benjamin Harrison, Ind., base hospital, Capt. W. J. MAYTUM, Alexandria.

Tennessee

To Biltmore, N. C., from Camp Zachary Taylor, Capt. O. B. CHANDLER, Union City.

To Camp Beauregard, La., from Fort Oglethorpe, Major J. L. ANDREWS, Memphis.

To Camp Custer, Mich., from Ann Arbor, Lieut. G. C. ENGLISH, Mount Pleasant.

To Camp Gordon, Ga., Lieut. F. M. BLANKENSHIP, Hartsville; from Camp Meade, Lieut. C. E. WARDE, Memphis; from Camp Sevier, Capt. E. M. ORR, Nashville.

To Camp Hancock, Ga., base hospital, from Fort Oglethorpe, Lieut. J. A. JAMES, Nashville.

To Camp Joseph E. Johnston, Fla., Capt. J. F. MASSEY, Fountain City.

To Fort Oglethorpe for instruction, Lieut. H. P. CALMOS, Memphis; from Knoxville, Lieut. R. W. PATTERSON, Knoxville.

To Fort Ontario, N. Y., Lieut. D. N. WILLIAMS, Chattanooga; from Fort Oglethorpe, Capt. J. E. Hall, Nashville.

To Fort Riley for instruction. Lieut. W. V. SANFORD, Ripley.

To Jefferson Barracks, Mo., from Camp Gordon, Major G. M. ELLIS, Chattanooga.

To San Antonio, Texas, Kelly Field, as orthopedic surgeon, from Southern Department, Lieut. R. F. PATTERSON, Knoxville.

The following order has been revoked: *To Hoboken, N. J.*, from Camp McClellan, Lieut. R. L. MOTLEY, JR., Dyersburg.

Texas

To Camp Beauregard, La., base hospital, from Camp Logan, Lieut. F. H. NEWTON, Dallas.

To Camp Dodge, Iowa, evacuation hospital, from Camp Cody, Lieut. E. C. AXTELL, Lipan.

To Camp Grant, Ill., evacuation hospital, from Southern Department, Capt. L. G. AMENT, Victoria.

To Camp Greene, N. C., base hospital, from Fort Oglethorpe, Lieut. A. F. LEACH, Weatherford.

To Camp Logan, Texas, Lieuts. J. P. REED, Port Arthur; J. H. POPE, Tyler; from Fort Riley, Capt. C. W. GRIFFITH, LaPorte.

To Camp MacArthur, Texas, Lieut. C. A. DREUSS, Fort Worth.

To Camp Sevier, S. C., base hospital, from Camp Hancock, Capt. C. B. McGLUMPHY, Galveston.

To Camp Stuart, Va., base hospital, from Army Medical School, Lieut. A. H. NEIGHBORS, Seguin.

To Camp Travis, Texas, from Southern Department, Major E. L. GOAR, Houston.

To Camp Wadsworth, S. C., evacuation hospital, from Camp MacArthur, Capt. H. E. NICHOLSON, Mobertie.

To Camp Wheeler, Ga., base hospital, from Camp Joseph E. Johnston, Lieut. A. S. GRAYDON, Paris.

To Fort Douglas, Utah, from Fort Oglethorpe, Lieut. J. E. McDOWELL, Shamrock.

To Fort Oglethorpe for instruction, Lieuts. D. J. SAUNDERS, Benham; H. B. DuPUY, San Antonio.

To Fort Riley, base hospital, from Camp Meade, Major H. F. CONNALLY, Waco; from Camp Pike, Lieut. H. DONNELL, Rockett.

To Fort Sheridan, Ill., base hospital, from Camp Grant, Capt. C. C. ODOM, Childress.

To Dayton, Ohio, McCook Field, from West Point, Miss., Lieut. F. B. KING, Durango.

To Garden City, N. Y., from Americus, Ga., Lieut. W. F. P'POOL, Sweetwater.

To Hoboken, N. J., from New York, Capt. J. H. SHELTON, Kingsville.

To Lonoke, Ark., Eberts Field, from Camp MacArthur, Lieut. M. SWEARINGEN, Port Arthur.

To Scituate, Mass., from Rockefeller Institute, Lieut. J. D. MARTIN, Call.

To Stithson, Ky., as camp surgeon, from Southern Department, Lieut. F. H. MILLS, Fort Bliss.

The following order has been *revoked: To Hoboken, N. J.*, from Camp Dix, Lieut. H. L. BROWN, Sherman.

Utah

To Camp Cody, N. M., base hospital, Capt. H. P. KIRTLEY, Salt Lake City.

To Camp Gordon, Ga., base hospital, Lieut. *U. H. SMITH, Bingham* Canyon.

To Camp McClellan, Ala., from Fort Oglethorpe, Lieut. *G. J. Field*, Salt Lake City.

Vermont

To Montpelier, Vt., as medical aide to the governor of Vermont, Capt. J. H. WOODRUFF, Barre.

To Walter Reed General Hospital, D. C., from Fort Oglethorpe, Lieut. B. E. WHITE, Brattleboro.

Virginia

To Camp A. A. Humphreys, Va., Lieut. *R. M. BAKER*, Edgehill.

To Camp Crane, Pa., from Fort Oglethorpe, Lieut. E. R. FERGUSON, Roanoke.

To Camp MacArthur, Texas. base hospital, from Fort Oglethorpe, Capt. E. L. FLANAGAN, Richmond.

To Camp Sevier, S. C., Lieut. G. C. ANDES, Timberville.

The following orders have been revoked: *To Camp Dix, N. J.*, Lieut. R. H. BROCKWELL, Barnette. *To Newport News, Va.*, Lieut. J. L. WRIGHT, Charlotteville.

Washington

To Camp Beauregard, La., base hospital, *from Camp Sheridan, Lieut.* E. R. BUSH, Fort Canby.

To Camp Custer, Mich., base hospital, *from Hoboken, Lieut.* W. H. BOONE, North Yakima.

To Camp Fremont, Calif., Lieut. T. D. BURGER, Spokane; from Western Department, Lieut. A. SHAW, Anacortes. Base hospital, from Camp Lewis, Capt. A. C. STEWART, Fort Steilacoom.

To Camp Kearney, Calif., Lieut. C. B. PASCOE, Tacoma.

To Camp Logan, Texas, from Fort Riley, Lieut. W. A. MITCHELL, Colfax.

To Camp Sheridan, Ala., from Fort Riley, Lieut. C. E. GREASON, Laconner.

To report to the commanding general, Panama Canal Department, Lieut. J. P. KANE, Tacoma.

To San Francisco, Calif., Letterman General Hospital, from Camp Fremont, Lieut. M. W. BRACHVOGEL, Montesano.

West Virginia

To Camp A. A. Humphreys, Va., from Washington, D. C., Lieut. D. T. WILLIAMS, Martinsburg.

To Camp Dix, N. J., Lieut. J. B. GROVE, Petersburg.

To Camp Dodge, Iowa, evacuation hospital, from Camp Pike, Lieut. O. P. CHAPMAN, Holden.

To Camp Greene, N. C., evacuation hospital, from Camp Hancock, Capt. K. C. PRICHARD, Huntington.

To Camp Joseph E. Johnston, Fla., Capts. O. S. HARE, Bluefield; W. H. WILSON, St. Albans.

To Camp Sevier, S. C., Lieut. W. C. Camp, Grandeeville.

To Camp Wheeler, Ga., *evacuation* hospital, from Camp Gordon, Lieut. R. F. THAW, Sistersville.

To Charleston, W. Va., as medical aide to the governor of West Virginia, from *Fort Oglethorpe, Lieut.* G. C. ROBERTSON, Spencer.

To Fort Oglethorpe for instruction, Lieut. B. C. WIRE, Hurley.

To Garden City, N. Y., from Mineola, Lieut. W. F. SHIRKEY, Jr., Charleston.

Wisconsin

To Camp Custer, Mich., base hospital, from Camp Greene, Lieut. E. A. GATTERDAM, Wauwatosa.

To Camp Hancock, Ga., as orthopedic surgeon, from Fort Oglethorpe, Capt. E. L. BOLTON, Chilton.

To Camp MacArthur, Texas. as orthopedic surgeon. from Fort Oglethorpe, Lieut. J. D. GILLIS, Wauwatosa.

To Camp Sherman, Ohio, evacuation hospital, from Camp Zachary Taylor, Lieut. A. J. LOOZE, Brodhead.

To Camp Travis, Texas, from Southern Department, Lieut. O. F. PARTRIDGE, Mattoon.

To Fort Benjamin Harrison, as orthopedic surgeon, from Central Department, Lieut. J. E. BENTLEY, Portage.

To Morrison, Va., from Lee Hall, Lieut. J. D. NELSON, Milwaukee.

Wyoming

To Camp Dodge, Iowa, as assistant to camp surgeon, from Western Department, Lieut. F. H. *SPARRENBERGER, Fort* Yellowstone.

To Fort Leavenworth, Kan., from Fort Riley, Capt. C. A. CONYERS, Buffalo.

To Fort Riley, base hospital, from Camp Kearney, Lieut. H. M. BROWN, Sheridan.

To Garden City, N. Y., from Mineola, Lieut. E. R. VAN COTT, Diamondville.

ORDERS TO OFFICERS OF THE UNITED STATES PUBLIC HEALTH SERVICE

Surg. J. W. KERR, to proceed to New Mexico to make a *study of* public health organization and administration.

P. A. Surg. F. A. CARMELIA, *proceed* to Petersburg, Va., for temporary duty.

P. A. Surg. J. S. BOLTEN, relieved at Jackson, Miss., proceed to Washington, D. C., preliminary to duty at the Angel Island Quarantine Station.

P. A. Surg. A. R. SWEENEY, *proceed* to Fayetteville, N. C., and assume charge of service operations at that place.

P. A. Surg. C. E. WALLER, proceed to Raleigh, *N. C.*, and assume charge of service operations at *that* place.

Asst. Surg. L. L. WILLIAMS, Jr., relieved at Millington, Tenn., proceed to Charleston, S. C., *for duty.*

Asst. *Surg.* CHARLES ARMSTRONG, relieved from duty on coast guard cutter *Seneca. Report to the bureau for orders.*

Asst. Surg. M. V. ZIEGLER, proceed to Charleston, S. C., to investigate an outbreak of *meningitis.*

Asst. Surg. F. B. ROSS, proceed to Chamberlain, *S. D.*, to investigate typhoid epidemic.

Asst. Surg. C. W. MITCHELL, relieved at Ellis Isand, N. Y., proceed to the Marine Hospital, Stapleton, *N. Y.*, *for duty.*

A. A. Surg. SAMUEL L. *HUTCHINSON*, proceed to Alexandria, La., *for duty in* extracantonment sanitation.

A. A. Surg. W. B. PARKER, proceed to Chattanooga, Tenn., for duty in extracantonment sanitation.

San. *Eng. J.* K. HOSKINS, relieved at Macon, Ga., proceed to Columbus, Ga., and assume temporary charge of extracantonment *sanitation.*

San. Eng. H. W. STREETER, proceed *to* Florence, Ala., for conference relative to Sheffield water *problem.*

Scien. Asst. W. H. BOLTEN, proceed *to Jacksonville, Fla.*, for duty *in extracantonment sanitation.*

Scien. Asst. WALLACE PURRINGTON, *relieved* at Portsmouth, *N. H., proceed to New London, Conn.*, for duty in extracantonment sanitation.

Scien. Asst. W. L. WOOD *directed to make an investigation of conditions at various points in the state of Virginia* to ascertain the probable *effect on the health of the military forces.*

San. Insp. JOHN F. GORDON, proceed to Portsmouth, N. H.. for duty in extracantonment sanitation.

San. Insp. ROBERT SERUNTINE, *relieved at Atlanta*, Ga., proceed to Pensacola, Fla., for duty in extracantonment *sanitation.*

San. Insp. R. C. SIMPSON, proceed *to Newport News*, Va., for duty in extracantonment sanitation.

Microscopist GETHYN B. RUGAN, proceed *to Wilmington*, N. C., for duty in malarial investigations.

Medical News

(Physicians will confer a favor by sending for this department items of news of more or less general interest; such as relate to society activities, new hospitals, education, public health, etc.)

ARIZONA

Funds for Y. M. C. A.—Dr. S. E. Lynd, associate manager of the Phoenix, Y. M. C. A., convened a meeting at Flagstaff, September 12, for the purpose of raising the sum of $110,000—Arizona's quota for the support of the Y. M. C. A. abroad.

Cooperation in Health Matters.—To cooperate with the state health authorities in Arizona, Dr. Frederick T. Fahlen, St. Louis, has been appointed acting assistant surgeon of the United States Public Health Service for Arizona. Dr. Orville H. Brown, Phoenix, new state superintendent of public health who succeeded Dr. William O. Sweek, will cooperate with the United States Public Health Service representative in the expenditure of the appropriation for the control of venereal disease.

ARKANSAS

Physicians Meet.—The District Medical Association met at Portsmouth, September 15. Dr. Harry C. King, Fort Smith, conducted a surgical clinic at Sparks Memorial Hospital.

Free Clinic.—At Fort Smith a free clinic was opened, August 20, at which special attention is to be given to the welfare of children. Drs. James A. Foltz, Dred R. Dorente and Irving Sternberg are in charge.

Personal.—Dr. J. C. Geiger, formerly in charge of the United States Public Health Service work in Lonoke, has succeeded Captain Weldon in charge of the work of the Little Rock district. Dr. Geiger is an expert on sanitary conditions in rice field districts.——Dr. St. Cloud Cooper, Fort Smith, has resigned as a member of the state board of health.——Dr. William M. Burns, Argenta, has been appointed food administrator of North Little Rock.

CONNECTICUT

Personal.—Dr. Henry F. Moore, superintendent of health of Hartford, has obtained leave of absence to go to England to engage in war work.——Dr. Stewart W. Reid has been appointed police surgeon of Hartford.

DISTRICT OF COLUMBIA

Additional Personnel for Medical and Dental Inspection of Schools.—The new appropriation act for the District of Columbia considerably enlarges the force of medical and dental inspectors of public schools, increases the number of school nurses, and provides for four dental clinics in the public schools to be served by eight dental operators, who shall be half-time dentists at $700 per annum, and four prophylactic operators, who shall be graduate nurses trained in the inspection and cleaning of teeth; these last are to be full-time employees at $900 per annum. The number of medical inspectors is increased by one, and of dental inspectors by two, making the new numbers twelve and four, respectively. There are to be three additional school nurses—ten in all—at $1,000 per annum.

Escape of Leper.—John R. Early the leper and ex-soldier who has acquired nation-wide notoriety and occasioned interstate complications by his tendency to wanderlust, is once more at large, having escaped from his cottage by sawing through the iron bars which guarded the window of his room. That his liberty will be short lived may be assumed as the police authorities are vigorously on his trail. This escape from quarantine is the fourth excursion of the kind during four years. Once he found his way to the Pacific Coast, having been unrestricted in his movements for several months. When apprehended a lively dispute arose regarding the responsibility for his care; he was finally sent back to Washington, however, apparently on the ground that having been so indiscreet as to make the diagnosis the District authorities would have to bear the consequences.

Municipal Tuberculosis Dispensary Opened.—The past fortnight saw the inauguration of a new municipal social service work in the opening of the District of Columbia Tuberculosis Dispensary. The dispensary will be in charge of Dr. W. D. Tewksbury, who will have as assistants, Drs. Everett M. Ellison and Thomas Miller. A liberal appropriation was granted by Congress for this project and, while not yet complete, the equipment of the plant will be modern and ample. The roentgenologist in charge will be Dr. W. H. Merrill. The new dispensary will replace the outpatient work heretofore conducted under the auspices of the Association for the Prevention of Tuberculosis and will serve as the obviously necessary supplement to the excellent Municipal Tuberculosis Hospital. Later there will be established in the same building a social hygiene clinic, the chief of this service being Dr. Harry A. Fowler; Dr. William G. Young will be the second in command.

Personal.—Drs. A. L. Stavely and V. B. Jackson, both of whom have been ill and have undergone surgical operations of some magnitude, have recovered. Dr. Jackson is again actively at work, while Dr. Stavely has gone away for a vacation.——Dr. W. S. Bowen has recently recovered from an illness and has gone away for a much needed rest.——Dr. Harry S. Bernton, recently bacteriologist of the state board of health of Rhode Island, has been appointed chief of the bureau of preventive diseases and director of the bacteriologic and serologic laboratories of the health department of the District of Columbia. As chief of the contagious disease service, Dr. Bernton succeeds Dr. William C. Fowler, who became health officer following Dr. William C. Woodward's departure to Boston, and as director of the laboratories, he succeeds Dr. J. J. Kinyoun, who as major, M. R. C., is doing epidemiologic work for the Army.——Dr. E. W. Titus has been made deputy coroner, a post recently vacated by Dr. W. Browne Carr, now in the Army medical service.

ILLINOIS

Poliomyelitis.—A second case of infantile paralysis within a week was brought to the attention of health officers of Evanston, September 16.——One new case of poliomyelitis was reported, September 13, at DeKalb, making five cases under treatment at that time. Serum was being used in the treatment. The same date seven cases of scarlet fever were in quarantine.

Quarantine for Venereal Disease.—At Camp Grant, September 20, an order was issued by Col. H. C. Hagadorn, camp commander, that all men with venereal disease will be quarantined in special camps, two of which have been provided for colored men and one for white men. There are said to be between 1,000 and 1,200 men afflicted with venereal disease in the camp. Practically all these cases are in recently inducted men.

Personal.—Dr. Carl E. Black, Jacksonville, has been appointed a member of the Greek commission in charge of the surgical department and will sail soon.——Dr. Clarence H. Boswell, Rockford, has been reappointed county physician with the understanding that his contract is to be cancelled when he is called into military service.——Dr. Albert E. Campbell, Chicago, has been appointed district health officer of Springfield. He was formerly surgeon to the Illinois Central Railroad.

Illegal Practitioners Fined.—J. W. Schuppacher of Edwardsville, Madison County, was arrested by the Illinois Department of Registration and Education for practicing medicine without a license. The court assessed a fine against him of $100 and costs, amounting to $128.20. Joseph Zientek of 2610 Milwaukee Avenue, Chicago, was also arrested by the Illinois Department of Registration and Education for practicing medicine without a license and was fined $25 and costs by the municipal court of Chicago.

Influenza.—In addition to the large number of cases of influenza in the Great Lakes Training Station, there are many cases in the civil population in towns along the lake. September 17, 150 cases were reported at Lake Forest and 200 at Waukegan. The Army students at Fort Sheridan and all men in the Great Lakes Aviation Camp, in addition to the 50,000 men in the Naval Training Station, have been placed under quarantine. September 20, it is reported that the epidemic at the Great Lakes was on the wane, and it was expected that there would be a decrease in the number of cases daily.

To Treat Returned Tuberculous Soldiers.—A movement has been started at East St. Louis which has the support of the County Medical Society as well as the State Medical Society and the Illinois Tuberculosis Association through its president, Dr. George T. Palmer, Springfield, to provide appropriate and continuous care for soldiers returned from the front or from the army camps on account of tuberculosis. It is said that over 1,200 have been returned up to this time. Work in St. Clair County at East St. Louis is under the direction of Dr. Charles W. Lillie, county medical director. Similar work is to be undertaken in the other counties.

Correction of Remediable Defects in Registrants.—A plan has been worked out by the War Committee of the Illinois State Medical Society by which registrants who have been placed in Group 1, Class B, on account of remediable defects, may be provided gratuitous surgical and hospital aid in having their defects remedied. This plan, together with a list of competent and trustworthy physicians and surgeons, and a list of hospitals that will care for such registrants, has been presented to Major John M. Dodson, medical aide to the governor, and through these channels the adjutant-general of the state has been led to issue to the chairman of each local board the formal offer of the physicians and hospitals to provide such service to registrants with remediable defects, together with a list of the hospitals and surgeons in the territory most convenient to any particular registration district. Accompanying these lists, which will be added to from time to time, are blanks on which the postponed registrant is invited by the local board to have his defect remedied, giving him a list of physicians and surgeons in his neighborhood who have made the offer of gratuitous service, a blank on which the registrant accepts the offer and selects the surgeon and hospital, a blank to be furnished the registrant addressed to the surgeon selected and one to the hospital selected. The registrant is given to understand that he need not accept the services of any of the surgeons named, but may employ one of his own choice. It is also provided that hospitals which cannot accept registrants for free treatment shall notify the local board of such fact and give their minimum charge for taking care of the registrant, so that the local board may arrange for the payment of such charges through some organization seeking to aid the government. Due publicity is to be given in the neighborhood of the circumstance of the registrant being willing to have his defect remedied that he may enter the service, so that he may be given credit for his patriotism, and also to encourage others to have their physical defects remedied.

INDIANA

Anesthetists to Meet.—The fourth annual meeting of the Interstate Association of Anesthetists was held in Indianapolis, September 25 to 27, at the Claypool Hotel. Dr. E. H. Embley of Melbourne, Australia, and Dr. James Cotton of Toronto, Canada, attended the meeting.

Returned Home on Acount of Tuberculosis.—September 16, the Indiana Society for the Prevention of Tuberculosis received notice of the return of 161 Indiana boys who have been discharged from the Army on account of tuberculosis. This makes a total of 565 discharged from the Army on account of this disease.

Quarantine for Venereal Disease.—An ordinance recently passed by the Indianapolis City Council in the interest of the eradication of venereal disease became effective, September 2. All such cases must be reported and the afflicted person must obtain treatment from a licensed physician and undergo detention in his own home.

Scholarship Provided by Will.—The will of Dr. Nikodem G. Borisowicz, South Bend, provides for a scholarship for a Polish student with a high school education at the Polish National Alliance College at Cambridge Springs, Pa., for the acquisition of an education in a civil profession. A committee is named to administer the trust.

Indiana Physician Receives Military Cross.—Under date of August 19 a list of Army orders by Gen. Sir Herbert Plumer announces the award of the military cross to Lieut. Glenn D. Ransom, M. C., U. S. Army, attached to the 5th Battalion of the Cameron Highlanders. Lieutenant Ransom resided in Hamilton, Ind., before entering the service.

Influenza Survey.—Dr. John N. Hurty, secretary of the state board of health, has ordered a survey of the state to ascertain how prevalent is the influenza. He has sent inspectors of the state board to visit Indianapolis factories engaged in war production and has asked the county health officers of the different cities in the state to report to him.

Addition to Antituberculosis Camp.—Mr. John W. Boehne, ex-mayor of Evansville, has contributed money to erect a new addition to the Boehne Antituberculosis Camp, near Evansville. The addition will cost about $12,000 and will be used for the returned soldiers who are suffering from the white plague, twenty of these now being in Vanderburg County. The new addition will accommodate from forty to sixty soldiers.

County Tuberculosis Hospital.—It has been announced that a board of county commissioners has full power to establish a county tuberculosis hospital without first submitting the question to the voters of the county or without the board being petitioned to establish such a hospital. However, if a board should refuse to establish such a hospital, the citizens, by means of a petition signed by 200 freeholders and an election, can force it to do so if the majority of the voters are in favor of it.

For a Joint County Tuberculosis Sanatorium.—A campaign is being conducted by the Indiana Society for the Prevention of Tuberculosis to secure the vote of the electors at the November election for a tuberculosis sanatorium for four counties, Noble, DeKalb, Steuben and La Grange. At the Kendallville fair, a headquarter tent was maintained and the campaign carried on by means of lectures, literature and personal solicitation. Similar work is being carried on in other districts of the state. In Marion County a full-time teacher, hired for the purpose, will give regular instructions in measures to prevent tuberculosis in all public schools.

IOWA

State News.—At Vinton the main building of Tilford Academy has been sold to the city for a hospital for $50,000, which sum has been left by the will of Miss Virginia Gay to establish a hospital in her name.——At Fort Dodge, the *Eleanor Moore Hospital*, given by Hon. S. L. Moore, who kept up the yearly financial deficit, is about to be closed on account of the scarcity of physicians. Unless Mr. Moore can make some other arrangements, the hospital will be closed until after the war.——The sum of $24,000 has been alloted to Iowa, a part of the $1,000,000 federal apppropriation for the control of venereal disease. This expenditure will be under the supervision of the state board of health.——At Clinton, September 18, eight cases of infantile paralysis were under quarantine.

MAINE

State News.—The state department of health is now carrying on, in cooperation with the government authorities, important sanitary and disease prevention measures in the Portsmouth-Kittery Civil Sanitary District and Bath, in connection with the shipbuilding industry in which there are engaged several thousand workmen. Dr. Paul Treble of the U. S. P. H. S. has been placed in charge of the district on the recommendation of Dr. Leverett D. Bristol, state commissioner of health.——In the venereal disease campaign, Dr. Harry E. Hitchcock, formerly district health officer for the northern part of Maine, has been placed in charge.——According to the report of the state board of health during last month, 390 children were born in the state who had not been named at the time the reports were sent in. This omission makes the certificates worthless to the individual for establishing the date of his birth. During the time named there were 1,062 births. This shows that about one third were improperly reported.

MARYLAND

Infantile Paralysis.—An additional case of infantile paralysis occurred in southwest Baltimore, September 17, in a white baby 5 months old. Thirty cases have been reported in Baltimore since March 30.

Meetings.—The Baltimore County Medical Association held its monthly meeting at the base hospital at Camp Meade as the guests of Lieut.-Col. Lloyd A. Kefauver, Manila, P. I., and the medical officers, September 18. Following the medical meeting, supper was served at the camp.

Personal.—Major J. Albert Chatard, Baltimore, who, prior to his departure for Italy, was head of the medical service at the U. S. Army General Hospital No. 2 at Fort McHenry, Baltimore, has arrived overseas.——According to a cable dispatch, Capt. Harry W. Maxson of Baltimore, who was captured by the Germans last February, is now interned in the officers' camp at Rastatt, Baden.——Dr. Walter L. Denny of Baltimore has resigned as a member of the board of police surgeons to enter military service. Dr. Denny has been engaged in government medical work for the past year.——Dr. John D. Fiske, official physician to members of the crews of foreign vessels, who has been ill at Johns Hopkins Hospital, is now convalescent.——Dr. John M. T. Finney, surgeon in chief of the American Expeditionary Forces, on his recent visit to the United States laid plans before the president for the establishment of hospitals for the treatment of shell shock. The necessary funds have been provided and Dr. Finney has returned to France, where he has made a special study of shell-shock cases.

NEW YORK

Memorial Wing for Peekskill Hospital.—A fund is being raised to build a memorial wing to the Peekskill Hospital in memory of the seven volunteer firemen killed recently in the Fleischman Plant at Peekskill. Thus far $12,000 has been subscribed.

Medical Meeting Postponed.—A meeting of the Medical Association of Central New York, which was scheduled to take place October 17, has been abandoned on account of the absence of many members at the front. The next meeting will be held in 1919. Dr. John J. Buettner, Syracuse, is president, Dr. Robert Burns, Syracuse, secretary, and Dr. Thomas F. Laurie, Syracuse, treasurer.

New York City

Personal.—Dr. Abraham Jacobi's summer home at Lake George was destroyed by fire on the night of September 20. Dr. Jacobi, whose sleeping apartments were cut off from the rest of the building by the flames, had a narrow escape, but suffered from nothing more serious than shock and a few bruises. A valuable collection of historical antiques was destroyed.

New York Academy of Medicine.—The first meeting of the New York Academy of Medicine for the season 1918-1919 will be held, Thursday evening, October 3, at 9 o'clock. At that time Prof. Graham Lusk, one of the representatives at the recent meeting of the Interallied Scientific Food Commission abroad, will deliver the Wesley M. Carpenter lecture, his subject being "The Scientific Aspect of the Interallied Food Situation."

Raising Funds for Hospital.—The women physicians of the New York Infirmary for Women and Children have started a campaign to raise $200,000 for this institution. Dr. S. Josephine Baker is chairman of the campaign committee of 400 volunteer workers. Others active in the effort to reinstate this institution are Dr. Anna Howard Shaw, Dr. Alice E. Wakefield, Dr. Louis D. Ray and Dr. William Emmet Cuff, all of New York City.

More Women Doctors Sail for France.—The second unit of the American Women's Hospitals, which is to be added to the staff of the military hospital directed by Dr. Barbara Hunt, Bangor, Me., at present working with the Sixth Army Corps in cooperation with the American Committee for Devastated France, has sailed. The unit includes the following: Drs. Caroline M. Purnell, Philadelphia; Mary L. Evans, Middletown, Conn.; Charlotte Fairbanks, St. Johnsbury, Vt.; M. Ethel V. Fraser, Denver; Mary MacLachlan, Portland, Ore., and Ier Jay Manwaring, Norwich, Conn. Dr. Purnell is special commissioner for the American Women's Hospitals in France.

The Influenza Situation in New York.—According to a statement made by the health department, September 20, there were at that time about 450 cases of influenza in the greater city. Health Commissioner Copeland expresses the opinion that the disease is not getting away from the control of the health department, but is decreasing. Citizens who have contracted the disease are quarantined and the health department is prepared to compel patients who may be so situated as to be a menace to the community to go into hospitals. The bacteriologists of the department of health find Pfeiffer's bacillus in a large percentage of the cases, and, in addition, a minute organism, as yet unidentified. In order to better control the spread of influenza the health board at its regular meeting, September 17, placed pneumonia and influenza on the list of diseases that must be reported by all physicians.

Change in Administrative Methods in Health Department.—Certain changes in the administrative system of the New York Department of Health are to go into effect, October 1, having for their purpose the coordination of the work of the department and the granting of autonomy to the boroughs. The chief officer in each borough, known as the assistant sanitary superintendent, will become the head of that borough. There will be attached to each of the boroughs, as at the present time, a representative of each of the bureaus of the department requiring field representatives. All the employees in a given borough will be under the direction, supervision and control of the assistant sanitary superintendent, though it is understood that, except in cases of emergency, each employee assigned to a borough office for the work of a given bureau will not be taken from that particular work without orders from the commissioner's office. Questions of policy, exceptional conditions, and changes in personnel will be brought to the personal attention of the commissioner, who will make final decisions in cases of disagreement between the sanitary superintendent and the head of any borough. It has been the belief of those directly interested in the administration of health department work that in a city as large as Greater New York the borough office should have greater authority in the administration of local affairs, since in this way there could be personal contact with an actual knowledge of local conditions impossible under the centralized bureau system, and especially impossible under the triple headed district now in force. The change will overcome these objections. The more minute details of the new plan have not yet been made public.

OHIO

State Meeting Abandoned.—The meeting of the State Medical Association, which was to be held at Columbus, October 1-3, has been abandoned on account of war conditions and the demands on the medical profession.

PENNSYLVANIA

Urge Better Medical Care.—According to a preliminary report submitted to the state health insurance commission by its investigating staff, there is an average loss of 8,400,000 working days a year in Pennsylvania. It is also asserted that a large number of the serious illnesses appear to be due to the lack of medical care for minor ailments; that present facilities for medical care of employees are not satisfactory and that a study of a typical working class district in Kensington, Philadelphia, showed that more than half of the illnesses were those of wage earners and that each sick worker lost an average of thirty-nine days' time and almost $80 in wages. Recommendations for reducing this waste of industrial forces will be placed before the legislature next January.

Philadelphia

Influenza Made Reportable Disease.—September 21, the board of health made "Spanish" influenza a reportable disease in order to bring it under immediate control among the civilian population. All physicians are called on to report cases and to isolate every patient.

Gift to the Blind Fund.—The biggest individual subscription in the campaign to raise $150,000 for the Pennsylvania Working Home for Blind Men was announced, September 19. It was $10,000 and was given anonymously with the stipulation that an additional $90,000 be collected before the end of the campaign. Up to September 19, $61,000 had been collected.

Personal.—Dr. Cornelius T. McCarthy, now a first lieutenant in the United States Army Medical Corps attached to the British army, has been awarded the British military cross for the second time.——Dr. Samuel L. Baron has been made assistant school medical inspector, bureau of health, with a salary of $600.——Dr. Edwin S. Darby, who resigned from the dental department of the University of Pennsylvania a year ago, after more than thirty years of service, has returned to the institution at the request of the faculty and board of trustees.

Meeting of Babies' Welfare Association.—The Babies' Welfare Association held a meeting in the red room of the Bellevue-Stratford, Monday evening, September 23. The program follows: Neva R. Deardorff, Ph.D., American Red Cross, Washington, D. C.: "Birth Registration—A National Service"; Dorothy Reed Mendenhall, M.D., University of Wisconsin, representing the Federal Children's Bureau, Washington, D. C.: "The Reduction of Maternal Mortality"; John M. Baldy, M.D., president, Bureau of Medical Education and Licensure, Commonwealth of Pennsylvania: "The Demands of War-Time Obstetrics."

Medical College Reopens.—The Women's Medical College of Pennsylvania opened its sixty-ninth session, September 24. Dr. Martha Tracy, dean of the college, made the introductory remarks, and Dr. Eleanor C. Jones, professor of pediatrics, delivered the principal address. Announcement was made at the request of the government that a course for laboratory technicians had been added to the curriculum requiring seven months' study to complete it. Graduates in this course will be ranked as apprentice technicians in military hospitals. A high school education and a knowledge of chemistry and biology are necessary for matriculation. Seventy-five students were enrolled.

State Society Meeting.—The Medical Society of the State of Pennsylvania held its fifty-ninth session in Philadelphia at the Bellevue-Stratford Hotel, September 24 to 26, inclusive. General meetings were held Tuesday and Wednesday mornings and Thursday afternoon; specialty sessions, Tuesday and Wednesday afternoons and Thursday morning. Tuesday evening, a patriotic meeting was held in the ball room, and Wednesday evening, a reception for the president and officers of the society. Thursday evening, there were moving pictures of war activties and music. A meeting and supper of the secretaries of the component county society was held Tuesday evening at Kugler's. The commercial exhibit was open every day at the Bellevue-Stratford.

CANADA

Infantile Paralysis.—Infantile paralysis has broken out in Manitoba necessitating the closing of several schools, churches and moving picture theaters.

Spanish Influenza.—This new and stylish disease, if it is any other than our old friend the grip in a new dress, has appeared in various parts of Ontario, particulary in the Polish military camp at Niagara-on-the-Lake. Col. John W. S. McCullough, Toronto, the chief medical officer of health for Ontario, is sending an official circular to physicians throughout the province on the subject.

Personal.—Lieut.-Col. Ernest Raymond Selby,Calgary, Alta., a graduate in medicine, University of Toronto, 1910, who has seen prolonged service in the C. A. M. C., is reported wounded. Originally a captain with No. 2 Canadian Hospital, he was also attached to the First Casualty Clearing Station, and made M. O. 43d Battalion. He was mentioned in dispatches in June last.——Dr. James M. Johnston, Toronto, convicted last March of performing an illegal operation, has been sentenced for two years less one day at the Burwash Prison Farm, North Ontario. Dr. Johnston is 63 years of age, practiced in Toronto more than thirty years, and from real estate holdings in Toronto is possessed of an annual income of $20,000. His counsel is endeavoring to secure his pardon from the minister of justice. In the meantime he will be assigned to medical duties at the prison farm.

GENERAL

Prevention of Epidemic Influenza.—The rapid spread of the pandemic of influenza has led to the issuance by the Surgeon-General of the Public Health Service of a circular letter addressed to the medical officers in each of the United States quarantine stations with reference to the prevention of the introduction into the country on vessels of the disease referred to as "Spanish influenza." A short description of the disease is given and the methods for its control and treatment summarized in *Public Health Reports,* Sept. 13, 1918.

Board on Excreta Disposal.—The Surgeon-General of the Public Health Service has created a board to make a general study of the question of sewage and excreta disposal. This board consists of C. W. Stiles, U. S. P. H. S., chairman; Prof. E. B. Phelps, U. S. P. H. S.; L. L. Lumsden, U. S.

P. H. S.; Prof. G. C. Whipple, of Harvard; W. S. Rankin, of Raleigh, N. C.; Col. V. C. Vaughan, M. C., U. S. Army, of Ann Arbor, and Prof. E. O. Jordan, University of Chicago. It will undertake an extensive study of small sewage units, such as the isolated farmhouse, small hotels, etc. The headquarters will be at Wilmington, S. C., with extensive laboratories and experimental facilities.

Regulations for Allotment of Venereal Disease Funds.—*Public Health Reports*, Sept. 13, 1918, contains the regulations promulgated by the Secretary of the Treasury under which state boards or state departments of health receive an allotment of funds appropriated by an act of Congress, approved July 9, 1918. This act provides that a million dollars shall be distributed to the states for the use of their respective boards or departments of health in the prevention, control and treatment of venereal diseases. The fund is to be distributed to the states in the proportion which the population of each bears to the population of the continental United States, according to the last census, exclusive of Alaska and the Canal Zone. The regulations under which this fund is distributed are fully set forth. The assistance of the United States Public Health Service is made available to state organizations in this work.

Government Desires Platinum.—The chief of the Section of Medical Industry of the War Industries Board has issued an appeal to every one, including especially physicians and dentists, that on account of the scarcity of platinum and the great need of that metal for war purposes, each should go over his instruments and pick out every scrap of platinum that is not absolutely essential for his work. These scraps, however small, should reach government sources either through accredited representatives of the Red Cross, who will make a canvass for the purpose of collecting the platinum, or through any bank under the supervision of the Federal Reserve Board. Current prices will be paid for the metal. A warning is issued against giving scrap platinum to any one not authorized to represent the Red Cross. Platinum absolutely required for dental and surgical instruments and purposes will be released from time to time.

FOREIGN

Spanish Medical Party Visits French Fighting Front.—The Spanish government appropriated 30,000 pesetas to pay the expenses of a party sent to study on the spot the progress realized during the war in the treatment of wounds. The party is in charge of Dr. R. Molla, professor at the University of Madrid, and includes one licentiate from the medical department of each of the ten universities of Spain. The term "licentiate" is applied to those who have finished the curriculum but have not yet received the doctor's degree. The one representing the University of Valencia is a young woman.

Campaign Against Birth Control.—A national association has been organized in the Netherlands to combat the new malthusianism. Dr. H. Pinkhof, one of the editorial writers of the *Nederlandsch Tijdschrift*, is the president. A two-day congress is planned for December, to be held at Utrecht, and eight addresses are to be presented. The meeting is open to any one on payment of the free of 2.50 florins which entitles one to take part in the discussions, vote and receive a copy of the transactions. The four sittings are open also to others interested on payment of 1 florin. Dr. Pinkhof's address is Plantage Franschelaan 11, Bijkantoor Prins Hendrikkade, Amsterdam. The name of the association is the Vereeniging tot bestrijding van het Nieuw-Malthusianisme.

Hospital Fare in Germany.—The *Nederlandsch Tijdschrift* quotes an article in the *Deutsche medizinische Wochenschrift* by Professor Hoeflmayer of Munich in which he protests against the investigating committee which visits the hospitals and interrogates patients and others, seeking to discover among the inmates some who without being sick, feign illness and stay in the hospitals in order to get better food to eat. He comments on the injury done the sick by these searching examinations, and the lack of confidence in the hospital physicians which they display. "Even if one physician should connive at such practices," he says, "they could not be carried out without the participation of the other medical attendants. It would be better if the physician suspected were given a chance to defend his diagnosis before the board of control. This would facilitate matters for all hands, while a physician who might not be acting in good faith would not dare to risk conviction for perjury."

PARIS LETTER

Paris, Aug. 22, 1918.

Call for the Class of 1920

Legislation has been passed calling the class of 1920 (young men 18 years of age) to the colors. The minister of war has sent instructions to the prefects and the commanders in chief of the various regions that the most rigid medical examinations should be made in selecting men from this contingent. The medical examiners will be required to be as rigid in the examination of these young recruits as they are in the case of volunteers. They must not accept either for full or limited service men who are not physically sound, but they can postpone or temporarily exempt those who, without being the victims of a characteristic organic disturbance, nevertheless have a weak physique, with a general make-up and antecedents which predispose to tuberculosis. Only those men should be accepted who are sound physically, strong and robust, presenting physical attributes clearly adequate for service. A selection which sacrifices the quality of the recruits for numbers defeats the object sought. The development of diseases of all kinds and of epidemics is favored, besides needlessly exposing the men already in service. Hence, a most careful selection of new recruits is of first importance. In fact, it is an absolute necessity in the interests both of the army as well as of the country.

Personal

Dr. Pierre Delbet, clinical professor of surgery in the Medical Faculty of Paris, has been made commander in the Legion of Honor. The citation recalled his fame as a surgeon, known the world over, and that at the beginning of the war he placed his services at the disposition of the minister of war, without reservation. He has carried to a successful conclusion a number of missions which have had a most favorable influence on the treatment of the wounded. He is the originator of a new method of treating fractures which has yielded excellent results.

Dr. Hartmann, professor of clinical surgery, and Dr. Jean-Louis Faure, professeur agrégé, both of the Medical Faculty of Paris, have been named officers in the Legion of Honor.

Team Work Between the Surgeons at the Front and in the Interior

An important conference was held recently at the Ecole d'application de médecine et de pharmacie militaires du Val-de-Grâce under the presidency of Dr. Louis Mourier, undersecretary of state for the Service de Santé militaire. The purpose of the conference was to bring together the medical officers of armies and of army groups, the consulting surgeons of the armies engaged in the recent military operations, as well as the directors of the Service de Santé and the chief surgeons of the surgical sectors of the regions of the interior who have received the wounded directly from the front. It was desired to establish a *liaison* between the physicians and surgeons of the various armies, and permit an interchange of views between these and the physicians and surgeons of the interior, and to secure an expression of opinion as to the lessons that could be drawn, from the medical point of view, from the military operations carried out from March to June of this year. Questions of special importance discussed were: the placing and function of the advanced ambulance groups, the evacuability, transportation and apparatus needed for thigh fractures, and the indications and technic of suture of war wounds.

Honor to the American Red Cross

The American Red Cross has received a letter from General Gouraud, commander of the Fourth Army, in which he expresses his profound admiration of the excellent services rendered by the American canteens to the Fourth Army.

Legacy to the Hospice des Quinze-Vingts

An American, Mrs. William Taylor Moore, née Robinson, bequeathed to the "Hospital for the Three Hundred" (an asylum for the blind in Paris, founded by St. Louis) 100,000 francs for the care and instruction of French soldiers blinded by the war.

Spanish Mission to Paris

Dr. Molla, a member of the Medical Faculty of Madrid. and twelve other professors chosen from the faculties of various Spanish universities, have arrived in Paris. They will visit the principal medical and surgical centers, remaining in Paris for the entire month of August. The mission is charged to prepare a report on the progress made by French war surgery.

A New Type of Surgical Battle Formation

The Société française de secours aux blessés militaires has devised a new type of surgical ambulance which meets the needs arising during active military operations. This ambulance can be advanced and moved back quickly, being essentially different from those in use for some months. Furthermore, it enables the surgeons to render speedy, immediate and complete service to patients with extensive wounds of the thorax, abdomen or head. It consists of a number of large tents, one serving as a *salle de triage*, a second for local administration, another for preparing the wounded for operation, a fourth for radiography; an operating tent, connected with the sterilizer camion, which contains two autoclaves, and, finally, the hospitalization or ward tents. For transport, the whole outfit is carried in two camions or trucks and two trailers.

American Red Cross at the Belgian Front

The Belgian sovereigns received the delegation of the American Red Cross, headed by Major Perkins, European Red Cross commissioner, at the Belgian front. Major Perkins delivered to Queen Elizabeth the million offered by the American Red Cross to the Belgian Red Cross. The king thanked the delegation and expressed his appreciation of the assistance given by the United States.

LONDON LETTER

London, Aug. 27, 1918.

The Maternity and Child Welfare Act

The powers of local authorities to safeguard the health of mothers and young children have been enlarged by the maternity and child welfare act, the introduction of which was reported in a previous letter. The act enables local authorities "to make such arrangements as may be sanctioned by the Local Government Board for attending to the health of expectant mothers and nursing mothers and of children who have not attained the age of 5 years and are not being educated in schools recognized by the board of education." A local authority exercising powers under the act must appoint a maternity and child welfare committee which must include at least two women. One third of the committee may consist of persons specially qualified by training or experience in subjects relating to health and maternity who are not members of the local authority. The government grant is now available for the following additional services: hospital treatment for children up to 5 years of age; lying-in homes; home helps; the provision of food for expectant and nursing mothers and for children under 5 years of age; crèches and day nurseries; convalescent homes; homes for children of widowed and deserted mothers and for illegitimate children, and experimental work for the health of expectant and nursing mothers and of infants and children under 5 years of age. The Local Government Board seeks to secure that, so far as practicable, there shall be an efficient midwifery service throughout the country, and it looks to the municipal councils to organize the necessary arrangements. It is considered important that the status of midwives should be raised, and that competent trained women who devote themselves to this service should be adequately remunerated. They consider that a competent trained midwife, devoting her whole time to the work, should be able to secure an income of from $600 to $750 a year. A local authority may pay or guarantee the salary of a competent midwife, and suggestions for improving the midwifery service are invited. Each midwife should be seen by the supervising authority's inspector of midwives at least once a quarter, and on these visits general instruction and assistance should be given. A sufficient staff of competent inspectors—preferably qualified medical women—is therefore needed. Local authorities should arrange to pay the fees of physicians called in by midwives during the period of confinement, though in cases which are not necessitous the patients would no doubt repay the cost.

The board's standard of 500 births to each health visitor has been modified. Experience has shown that when the duties properly required of a health visitor are fully performed, a district with about 400 births a year is ordinarily as much as one worker can undertake. Other offices, such as that of tuberculosis nurse, school nurse and mental deficiency visitor, may be held with that of health visitor in certain cases, so as to give the officer a compact district and save traveling. The salary of a whole-time officer acting as health visitor, with or without these other posts, should as a rule be not less than $600 a year. In sparsely populated districts it may be convenient to appoint the district nurse-midwives of nursing associations as health visitors.

The home nursing services in respect of which the grant is now available are nursing needed for expectant mothers, maternity nursing, the nursing of puerperal fever, and the nursing of measles, whooping cough, epidemic diarrhea in young children, and ophthalmia neonatorum. The board notes with satisfaction the recent increase in the number of welfare centers in which mothers receive medical and hygienic advice on the care of their children, and say that, when practicable, there should be a center for each health visitor's district. Centers may be combined with school clinics, especially for ophthalmic and dental cases, and, subject to certain conditions, cots may be provided experimentally at centers on a small scale, but not for acute cases of illness.

The provision of further lying-in accommodation in the many areas where it is needed is encouraged by the board; and suitable "home helps" may be employed and paid by the authority, to look after a woman's home during her confinement. The home help should undertake the mother's ordinary domestic duties, including cleaning, cooking, washing, care of children, mending and marketing. She should not undertake any work which properly belongs to the sphere of the trained nurse or midwife, nor assist at a confinement unless a physician or a midwife is in attendance. Home helps should be specially trained at maternity centers and day nurseries, receiving practical instruction in plain and invalid cookery, food values and prices, laundry work, mending, infant care and hygiene.

Civics and Eugenics

The Summer School of Civics and Eugenics, which will last for nearly a fortnight, was opened at Oxford. The opening address was delivered by Prof. J. H. Muirhead of the Birmingham University, who said that civics meant an intelligent interest in the whole organization of civilized society, and especially the society to which they themselves belonged. This extension of citizenship from devotion to the parish or the neighborhood to the state raised a difficulty in regard to their emphasis on civic education at the present time. He would be asked, Was not this the mistake which Germany had been making, that she had put the state in front of education? The education of the citizen had begun, innocently enough, in the call to look beyond the narrow interests of individual or family egoism, but had it not ended in the creation of another or more terrible egoism—the egoism of the state; and had not the state just at the present time tried to impress the idea of citizenship as the leading mark of education? He accepted the warning of a German writer against making the state the supreme object of devotion. Were they making a mistake in emphasizing civic education or citizenship as the oriflamme of their new education? Would it not be better to take as their guiding motto the free personality of the individual, and, instead of emphasizing the education of the citizen into a word like civics, should they not emphasize the freedom of the individual soul, and, perhaps in some new science yet unnamed, the doctrine of freedom? Passing to eugenics, he said it meant more than a kind of "adult hygiene" concerned with inheritance, rather than habits. What he understood by eugenics was a way of looking at their civilization which emphasized the mental and physical inheritance as something which was the result of the long ages of the struggle of mankind on earth. It seemed to him a good omen and a step founded on true insight as to the nature of civics and eugenics that the two societies had united in this school. It was the first effort, he understood, at cooperation between them.

Engineers and Public Health

In the *Times* engineering supplement, attention is called to the necessity for collaboration between medicine and engineering in undertakings that affect the public health. It is pointed out that at present engineers often take on themselves work that ought to be done by geologists, chemists and bacteriologists, and this without due consultation with physicians, although they cannot be specialists in all these subjects. On the other hand, health officers are sometimes imperfectly acquainted with the possibilities of engineering in connection with the treatment of water and sewerage work generally, and without such knowledge they are obviously at a disadvantage in suggesting improvements. Proper collaboration between the engineer and specialists in the various branches of science concerned is therefore required, and would be the means not only of saving needless expenditure but of enhancing the efficiency of the works carried out.

Deaths

Zina Goodell Harrington, Mankato, Minn.; Albany (N. Y.) Medical College, 1857; aged 88; at one time a member of the American Medical Association; and president of the Minnesota Valley Medical Association; who in 1907 was presented with a loving cup by his co-workers in celebration of the completion of fifty years of practice; for several years president of Mankato State Bank; died at his home, September 10, from senile debility.

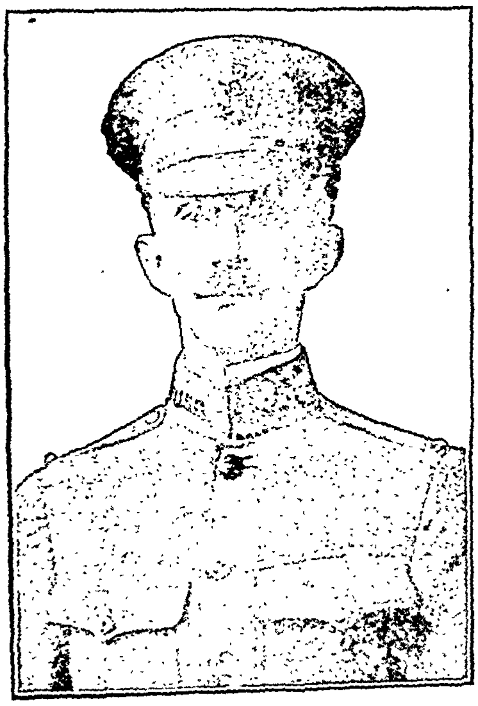
William Franklin Barclay, Pittsburg; Long Island College Hospital, Brooklyn, 1866; aged 76; a member and once vice president of the Mississippi Valley Medical Association; who discovered in 1893 and applied methods whereby he successfully combined gold with bromine, mercury, arsenic and other metals; died at his home, September 9.

Lieut. Samuel Brody Leiser, M. C., U. S. Army, Chicago; University of Illinois, Chicago, 1917; aged 26; a Fellow of the American Medical Association; who had been on duty at U. S. General Hospital No. 9, Lakewood, N. J., and was on leave in Chicago; died at the Presbyterian Hospital, September 16, from ulcerative colitis.

Walter C. Taylor, Springfield, Ohio; Starling Medical College, Columbus, Ohio, 1898; aged 52; a Fellow of the American Medical Association; secretary of the Clark County Medical Society in 1915, and president in 1918; died in the City Hospital, Springfield, Ohio, September 12, from pulmonary tuberculosis.

Benjamin Charles Guldin, Minersville, Pa.; University of Pennsylvania, Philadelphia, 1870; aged 69; at one time a member of the Medical Society of the State of Pennsylvania, and coroner of Schuylkill County; died at his home, September 1, from cerebral hemorrhage.

James E. Wylie, Little Rock, Ark. (license, Arkansas, 1903); aged 68; a practitioner for forty-one years; night desk sergeant at police headquarters, North Little Rock, for several months; died at the home of his daughter in Los Angeles, June 18, from nephritis.



Died in the Service
IN FRANCE
Capt. Hoddie W. Daniels, M. C., U. S. Army, 1872-1918
See The Journal, last week, p. 992

George Dexter Dulin, Las Animas, Colo.; College of Physicians and Surgeons, Keokuk, Iowa, 1891; Beaumont Medical College, St. Louis, 1892; aged 52; for two terms a member of the state legislature; died in St. Luke's Hospital, Denver, September 4, from pneumonia.

Lieut. Harold Greene Porter, Assistant Surgeon, U. S. N. R. F., Syracuse, N. Y.; University of Syracuse, N. Y., 1911; aged 25; a Fellow of the American Medical Association; on duty at the Naval Hospital, Chelsea, Mass.; died recently from influenza.

James Henry Briggs, Providence, R. I. (license, Rhode Island State Board of Health, years of practice, 1895); aged 64; a practitioner of Providence for twenty-five years; died in St. Joseph's Hospital in that city, September 8, six days after a surgical operation.

William H. Kinnier, Dubuque, Iowa; Albany (N. Y.) Medical College, 1870; aged 74; a member of the Iowa State Medical Society; died in Mercy Hospital, Dubuque, September 9, a short time after a surgical operation.

Felix Stanislaus Rynkiewicz, Shenandoah, Pa.; Jefferson Medical College, 1917; aged 27; until July an intern in the State Hospital for the Northern Anthracite Coal Region of Pennsylvania; died at his home, August 30.

John McIntyre, Butte, Mont.; University of Bishop's College, Montreal, Quebec, 1898; aged 52; a member of the Montana State Medical Association; died at his home, September 11, from disease of the kidney.

Edgar Chapman Gates, Providence, R. I.; New York University, New York City, 1882; aged 59; formerly surgeon in the United States Marine Hospital Service; died at his home, September 10, from heart disease.

Lieut. John Houston Steen, M. C., U. S. Army, Vaughan, Miss.; University of Nashville, Tenn., 1907; aged 37; a Fellow of the American Medical Association; is reported to have been killed in action, August 11.

Ferdinand Bernhard Hoermann, Watertown, Wis.; Homeopathic Medical College of Missouri, St. Louis, 1878; aged 74; died at St. Joseph's Hospital, Milwaukee, September 15, after a surgical operation.

James Barr, Sierra Madre, Calif.; Rush Medical College, 1868; Hahnemann Medical College, Chicago, 1880; aged 82; many years a practitioner of Algona, Iowa; died in Los Angeles, August 24.

Alvaro C. Durkee, Pontiac, Ill.; Rush Medical College, 1901; aged 47; a Fellow of the American Medical Association; died at his home, July 23, from uremia.

Died in the Service
IN FRANCE
Lieut. John Houston Steen, M. C., U. S. Army, 1881-1918

Robert Goodlove Harris, Sandersville, Ga.; Meharry Medical College, Nashville, Tenn., 1917; aged 33; died at his home, September 7, from tuberculosis.

Allen Schley Reynolds, Hancock, W. Va.; University of Maryland, Baltimore, 1880; aged 61; died at his home, September 9, from acute gastritis.

Lewis A. Shollenberger, Reading, Pa.; Hahnemann Medical College, Philadelphia, 1885; died in a sanatorium in New Jersey, September 2.

James Addison Ambrose, Dayton, Ohio; Medical College of Kansas City, Mo., 1882; aged 74; a veteran of the Civil War; died recently.

Nathaniel Gooch, Nashville, Tenn.; Vanderbilt University, Nashville, 1885; aged 78; a Confederate veteran; died at his home, September 7.

Marriages

Lieut. Floyd Walter Aplin, M. C., U. S. Army, Waukesha, Wis., on duty at Waco, Texas, to Miss Elsie Evans of Washington, D. C., at Waco, recently.

Alexander Stewart MacMillan, Boston, to Dr. Anne Leslie Hooper of Somerville, Mass., in Boston, September 5.

Mefford Runyon, Leak Island, N. Y., to Mrs. Katherine Flower Kip of South Orange, N. J., September 10.

James M. Palmer, Jr., Cumberland, Md., to Miss Ruth Maxwell of Morgantown, W. Va., September 7.

Theodore F. Thompson, Lakewood, N. J., to Miss Ella Anderson of Toms River, N. J., September 4.

Harry A. Pawling, Watertown, N. Y., to Miss E. Louise Sweet of Adams, N. Y., September 2.

Levi St. John Hely to Miss Sophie Wolters, *both of Oakland, Calif.,* September 4.

The Propaganda for Reform

In This Department Appear Reports of the Council on Pharmacy and Chemistry and of the Association Laboratory, Together with Other Matter Tending to Aid Intelligent Prescribing and to Oppose Medical Fraud on the Public and on the Profession

CARMINZYM

Report of the Council on Pharmacy and Chemistry

The Council has authorized publication of the following which explains why Carminzym was not accepted for New and Nonofficial Remedies. W. A. Puckner, Secretary.

Carminzym is a tablet sold by Fairchild Bros. and Foster, New York. Each tablet contains, according to claims made, approximately 32 mg. of an extract of pancreas, 50 mg. sodium bicarbonate, 172 mg. prepared chalk, 1.5 mg. powdered ipecac and "aromatics *q. s.*" Without considering other possible conflicts with its rules, the Council held the preparation inadmissable to New and Nonofficial Remedies for conflict with Rule 10 which holds that unscientific or useless articles are not acceptable products.

The Council holds that complex mixtures of remedial agents are, from every point of view, inimical to therapeutic progress and therefore to the public welfare. Such mixtures are especially objectionable because it is impossible accurately to determine the effects which follow the simultaneous administration of a number of drugs having dissimilar actions; because the practice of prescribing such mixtures tends to discourage careful consideration of the special needs of individual patients without which there can be no rational drug therapy. On the contrary, with the use of such mixtures therapeutic treatment becomes haphazard and mere guesswork.

The Council, appreciating that long established customs cannot be changed at once, has applied Rule 10 concerning the recognition of mixtures with the greatest leniency compatible with consistency. When there has been a reasonable doubt concerning the value of a mixture it has frequently directed that Rule 10 should not apply pending further clinical trial of such mixture. In no instance has subsequent experience shown that a strict interpretation of the rule would have worked hardship or injustice. The Council feels that there is no longer warrant for the admission of complex mixtures to New and Nonofficial Remedies or for the retention of any that have been admitted unless definite evidence of the therapeutic value of such combinations is available. In accordance with this decision several mixtures now described in New and Nonofficial Remedies will be omitted at the expiration of the three year period for which articles are accepted.

Reverting to the Carminzym tablet: When it is desired to obtain the effects of pancreatic extract by oral administration it must be administered with a view of preventing its destruction by the gastric fluid. With this end in view an antacid should be administered to decrease the acidity of the gastric juice. The amount of alkali may be supplied in the form of any of the official preparations, but the amount must be adjusted to the individual patient for the reason that no two successive patients are likely to have the same degree of gastric acidity.

Ipecac has a well defined though limited field of usefulness. When it is used, it should be given with a due regard to the amount needed by the patient and the frequency of the repetition of the dose. There is no reason to suppose that any two successive patients will require ipecac and extract of pancreas in a fixed proportion and with equal frequency. As a matter of fact, the amount of ipecac in Carminzym is so small that no definite therapeutic action can be assigned to it and its use in this combination is purely empirical.

In a word, the employment of mixtures of pancreatic extract, alkalis, ipecac and carminatives in fixed proportion leads to slipshod treatment and irrational therapeutics. Carminzym is an irrational mixture the use of which is detrimental to therapy.

The preceding report was sent to Fairchild Bros. and Foster for comment in accordance with the Council's usual procedure. The following reply was received:

> The long established custom of the use of mixtures of remedial agents rests upon considerations well known and generally accepted. This is equally true of combinations of drugs of similar and dissimilar properties. The drugs of these combinations, especially those of marked therapeutic action, are well known and used by themselves when indicated.
>
> In fact, dissimilarity of action is a cause of combination, an essential of synergism.
>
> Drugs classed as similar are by no means alike in action; laxatives, tonics, carminatives, diuretics are combined with distinct advantage, economy of dose, enhanced effect, potency not obtainable with the single drug.
>
> Your sweeping arbitrary conclusions that complex mixtures of remedial agents are from every point of view inimical to therapeutic progress is not, it seems to us, sustained by fact and experience. There is therapeutic progress in the considerate use and observation of combinations as well as in the use of a single drug. Indeed, in the production of a synthetic chemical substance as a therapeutic agent, the combination of potent and dissimilar elements is worked out to mitigate and correct an objectionable side effect, and promote desirable action.
>
> As for ourselves, at the very outset in our line of work we quite voluntarily declared our principles and our intentions as opposed to incompatible and therefore unstable or inert combinations of the enzymes; and against the "unnecessary multiplication of preparations" —see Fairchild's Hand-book of the Digestive Ferments.
>
> Is not this after all the crux of the whole matter—does a combination contain the ingredients stated, does it possess the demonstrable properties which are to be attributed to it in consequence of this composition; and if for a certain purpose, is it well designed therefor?
>
> Carminzym presents certain agents of well known properties, not in the least of incompatible or antagonistic action, but indeed especially suitable for the particular purpose designed; its efficacy not to be measured and judged by theory or opinion as to the efficiency of a certain dosage of a particular drug by itself. That the doses as contained are minimal and effective is distinctly advantageous.
>
> The alkaline carbonates are in Carminzym in stated quantities; the physician adjusts the dosage to the individual patient and with obvious evidence of the efficiency of the adjustment. As we understand it, the employment of alkaline carbonates is not based on purely chemic considerations—a definite known quantity of acid of the gastric juice is to be neutralized; the whole literature and practice dealing with the alkaline carbonates show them to be accredited with a much wider field of use and repute in gastro-intestinal disorders.
>
> The pancreatic extract in Carminzym is designed to be diffusible in the stomach, the tablet is preferable to be crushed in the mouth before swallowing, and we believe the pancreatic extract to be an effective constituent as administered in Carminzym.
>
> You comment as follows:
>
> > "Ipecac has a well defined though limited field of usefulness. When it is used it should be given with due regard to the amount needed by the patient and the frequency of the repetition of the dose."
>
> This in a sense may be said of any of the most useful drugs, but not in the least special degree does it apply to ipecac, which is, on the contrary, of quite characteristic, peculiar range of therapeutic properties, useful in varying combinations and in widely varying proportions and doses according to the purpose for which it is employed.
>
> Ipecac in well known official alkaline, carminative, laxative preparations occurs in the "average dose" in the varying qantities of 1/14, 1/10, 1/8 and 3/16 of a grain.
>
> The ipecac in combination with the other ingredients in Carminzym is designed for a tablet which shall carry a minimal quantity whilst capable of adequate remedial action, thus admitting of increase of dosage or repetition as occasion requires. This quantity of ipecac was not taken at random, but chosen after long trial and consideration.
>
> We believe that Carminzym possesses carminative properties in a superior degree and that, furthermore, in consequence of its composition it directly stimulates the gland secretions and thus exerts a beneficial action upon the whole digestive functions.
>
> Carminzym is for use as occasion requires, and this is to be especially noted. Thus it is not only of direct benefit, but helpful in promoting systematic therapeutic measures and regimen.
>
> The Council takes the ground that complex mixtures of remedial agents are so wrong that there is no longer warrant for their admission into New and Nonofficial Remedies; and that Carminzym is an irrational mixture.
>
> We hold that certain desirable therapeutic properties may rationally be attributable to Carminzym; and that these are manifested in practice.
>
> During the time since the description was sent and the receipt of the statement of the action of the Council, some ten months, Carminzym has proved of constantly increasing service.

The statement in the letter of Fairchild Bros. and Foster "The long established custom of the use of mixtures of remedial agents rests on considerations well known and generally accepted" might well be paraphrased to read: The one-time prevalent custom of using ill-considered combinations of remedial agents has been thoroughly discredited and is generally abandoned by progressive practitioners. Such arguments as that "laxatives, tonics, carminatives, diuretics are combined with distinct advantage" have led to the use of irrational mixtures such as the compound syrup of hypophosphites and the electuary of theriaca. The Council is confident that no one who has studied the causes and treatment of digestive disorders will find occasion to prescribe at one time all the ingredients stated to be contained in Carminzym, and certainly not in the fixed proportions present therein.

The comments in the Council's report concerning ipecac certainly does apply to all active therapeutic agents. Ipecac was mentioned in the report because the several constituents of Carminzym were under discussion and hence it was necessary to point out the futility of the small dosage of ipecac in this mixture.

The announcement that "Carminzym has proved of constantly increasing service" is not convincing. The Council does not know of a single clinical study of the action of Carminzym under conditions which would have afforded satisfactory evidence of its therapeutic value.

INFORMATION WANTED

One of the Five Thousand Letters of Inquiry Received by the Propaganda Department Annually

Probably few of The Journal readers realize the service that the Propaganda department gives the public and the medical profession as an information bureau on the subjects of the nostrum evil and quackery. Ten years ago letters from laymen were an unusual thing in The Journal's editorial office. If more than one letter a week, for instance, was received, it was a subject of comment by the staff. Today the Propaganda department alone, answers between four and five thousand letters annually, and more than half of these are from the general public. Among such letters it is inevitable that some should be oddities. One of this type is given below. It may be of interest not only to the readers of The Journal generally, but especially to psychiatrists:

Dear Sir:—I Have inquired so much about The International Health Resort, 42nd St. & Grand Blvd., Chicago, if it will do all it claims & been told you will give information. Please explain fully. My Doctor said I was on verge of Diabetes. Also tell me about the National Distributing Co., 4311-19 Lincoln Ave., Chicago. Will you give me Address of Alexander Moseley in Chicago, the street and number as He is among the testimonials in the *Evidences of Success* published By The resort, saying He visited all resorts in Europe and None Cured Him till He went to the International of Chicago. I want His Address so I can write Him and verify the statement. Can you recommend any of Bernarr MacFadden's Health Resorts as Best place to go for Kidney and Diabetes Troubles, or would you advise to have treatment By Correspondence from Him.

Please explain about the Bodi-Tone Co., 2100 North Avenue, your City. Please state very Best place to get urine examined from Time to Time. Is The Life Extension Institute, 25 West 45th St., New York City the Best place, or if you Know of Better please state.

Probably you can state some Institution in East Here that treats on same plan as International of Chicago.

I've been taking Chologestine, 2 teaspoonful after meals since June 7th & Has stopped Brick Dust in Chamber. Also take Bell Ans Tablets Before & after meals. Please state if Peptenzymes is good also Nuclinated Phosphates Tablets, Abbotts. Phillips Wheat Phos. (Acid).

Please give address of U. S. Public Health Service Department & can you tell me if Dr. F. L. Sweany, State St., your City is dead, if so when, and was he such a great doctor?

I would like to know if Lionel Strongfort, Terminal Bldg., 86 Park Place is thoroughly reliable & will do all He says. He claims to Be Best developed man in World & issues pamphlets giving Him recommendations from the professors in Europe. He gives course by Correspondence in Physical Culture. Would you commence with Him or take Lessons in person from instructor? which I want to take as it is Beneficial.

Or could you name some professor or institution Here in east which would Be Best for me to attend to get Best results. Can you give me standing of some of these Physical Culture Methods also Bernarr MacFadden's Course By Mail in "Brain & Body Building". He gives this Course in Conjunction with His Encyclopedia of Physical Culture. One is guide to the other. Or would you take Course personally & what benefit thereby? If any. Also about Walter LaRauss, 825 Broad St., Newark, N. Jersey. He claims Best System. Anthony Barker, 127 West 42nd St., New York City.

Do you think I would get all Benefit I would derive from all above mentioned in a German Turn Verein, Newark Turn Verein? The Paneliculator Co. of Cleveland, Ohio also sent testimonials Here from all over. Do you Know them? My Doctor, Says it is my liver & Pancreas & if I take Physical Culture with Medicines I'm told I will get results. But must get the right & proper Movements to accomplish results. So many Systems advertised in *Health & Physical Culture* Magazines. Please give me list of those fraudulent ones.

Can you give me standing of Advance Thought Publishing Co., 159 No. State St., your City & William Walker Atkinson who edits a Magazine on Clairvoyance. I think he is in that Pub. Co. at 159 No. State St. Also Yogi Pub. Society of your city. Thanking you very much for same in Advance & Truly yours,

F——— D———, New Jersey.

P. S.—Probably you can name very Best Physical Culture System that embraces all other System & get all in that System you recommend. I am interested also in Allied & Occult Sciences & Clairvoyance. Are there reliable Systems in Chicago at all? Do you recommend advertisements in *Nautilus*, New Thought Magazine?

Correspondence

THE USE OF SEWAGE AS FERTILIZER

To the Editor:—The present world crisis calls for the exertion of every effort to meet the unusual demands made on the people of our nation. Nowhere is this realized with greater force than in the matter of food production. On the one hand, the demands of our allies and our own demands call for a great increase in production. And on the other hand, the problems of transportation, labor and fertilizer are all working to make the task of increased production more difficult.

Of the latter, the matter of fertilizer has become an acute problem. In the first place, intensive farming calls for an increase in the amount of fertilizer used. And in the second place there is a serious shortage of fertilizer due to the fact that America has been dependent for so long a time on that imported from Germany. The supply from Germany being cut off, the shortage has become serious, and in some places has already affected the crops.

The subject of fertilizer shortage has been ably discussed by Frank Parker Stockbridge in the *World's Work* for May, 1918. His article showed how Germany annually dumped about 250,000 tons of potash in the United States at about $40 a ton. Today there is a call for 500,000 tons of the fertilizer. It cannot be bought for less than $300 a ton, and in limited quantities at that price. The magnitude of the industry and the need is thus shown.

Human feces and urine possess a high fertilizing value. It is a knowledge of this fact which has made intensive farming of the highest type a possibility in China, and which has made possible the feeding of many millions of people in comparatively limited areas.

Yet notwithstanding its high value as fertilizer, the use of sewage has been condemned because of the extremely high risk of spreading water and sewage borne diseases, typhoid, dysentery, cholera and intestinal parasites. For this reason, a recent order (The Journal, April 27, 1918, p. 1242) has prohibited the use of sewage as fertilizer in California except for grasses.

The danger from the use of sewage as fertilizer is very real. One of the triumphs of sanitation has been the lowering of the typhoid rate by a realization and the control of the relation between sewage and the water supply of a community. In China the use of human feces and urine has resulted in widespread infection with hookworm and *Ascaris lumbricoides*. And the only reason why devastating epidemics of cholera and dysentery have not depopulated whole provinces is that the Chinese are accustomed to use boiled tea instead of fresh water, which is never drunk as a beverage.

Shall, then, all this valuable material, so necessary and so useful as fertilizer keep on going to waste as it is at the present time? If necessary to preserve the health of the nation by preventing epidemics, the answer must be "Yes."

My purpose, however, is to present for consideration of the profession, and public health officers in particular, an outline of a plan by which it may be possible to use sewage as fertilizer, and with safety.

March 12, 1918, an experimental garden was planted for determining the value of the material from the second and third chambers of the septic tank, in use in the Kachek Hospital, as fertilizer. The purpose of the experiment (a report of which is to be published in the *China Medical Journal*) has been to work out a plan by which the Chinese may use human feces and urine as fertilizer with safety.

Three equal amounts of beans, millet and two other Chinese grains were planted in rows, one part to a row. One row was fertilized with material from the second chamber of the septic tank, one row was fertilized with material from the third chamber of the septic tank, and the third row—the control—was unfertilized. Thus there were three rows of beans, three of millet, etc. The results of the harvest are shown in the accompanying table. The value of the material from the septic tank as fertilizer has thus been demonstrated in a practical way.

FERTILIZING POWER OF MATERIAL FROM THE SEPTIC TANK

Foodstuff	First Row: Material from Second Chamber Used, Ounces	Second Row: Material from Third Chamber Used, Ounces	Third Row: Control; No Fertilizer Used, Ounces
Beans	42	29	12
Millet	5.0	2.9	1.7
Ku vae	84	66	49
Tiak kha	11.5	8.0	6.5

The action of the septic tank is well known, and needs no comment except to note that the material from the second and third tanks would contain no pathogenic bacteria, protozoa or ova, especially if treated with heat or chlorinated lime.

We have, then, a large quantity of fertilizer that can be made safe by means of the septic tank. That all the sewage of large towns and cities in America should go to waste in view of the present shortage of fertilizer, in view of the great demand for increased production of food, and in view of the fact that it can easily be made safe, is unpardonable. Steps should be taken at once to use this great asset. Not only will it solve the fertilizer problem during the war, but it will make America independent of outside sources of fertilizer after the war.

NATHANIEL BERCOVITZ, B.S., M.D.,
Kachek, Hainan, China.

Queries and Minor Notes

ANONYMOUS COMMUNICATIONS and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted, on request.

SUGAR TREATMENT OF TUBERCULOSIS

To the Editor:—I read an article recently on "Sugar as a Cure for Tuberculosis." This article stated that Prof. Domenico Lo Monaco, director of the Biochemical Section of the Lincei Academy of Rome, is credited by the Italian scientific press with a discovery which will revolutionize the treatment of tuberculosis. Please inform me as to what form of saccharose is used, the strength of the solution, the number and frequency of injections, etc. I shall be grateful for an answer to the foregoing questions and for any other information you can give me concerning this treatment, as I have several cases of tuberculosis under my care.

L. C. J. NUNES, M.D., St. Martin, D. W. I.

ANSWER.—A brief note appeared in Queries and Minor Notes (THE JOURNAL, July 13, 1918, p. 142) concerning this treatment of Lo Monaco, merely stating that the subject was new and had thus far been referred to only in lay publications. The sugar treatment of tuberculosis is the result of researches since 1907 by Dr. Lo Monaco, who is professor of physiologic chemistry at the University of Rome. His researches have been concerned with the influence on the secretions of sugar parenterally introduced. He had previously considered the possibility of influencing the mammary and other secretions by subcutaneous injection of small amounts of sugar. He found that when persons with copious bronchial secretion were given subcutaneous injections of 4 or 5 gm. of saccharose, expectoration rapidly diminished and ceased completely in many cases. When the injections of the sugar solution were stopped, expectoration returned and disappeared again when the daily injections were resumed. A study of various cases indicated that a complete cessation of bronchial secretion occurred when there was no dilatation of the bronchi or when the cavities in the lungs were not large. When these were present the secretion decreased, but did not disappear completely. The sugar has an inhibiting action on the secretions through vasoconstriction, which the injection of strong solutions of sugar will produce. This vasoconstricting action affects the lymphatics and mucous glands. The strong solutions of saccharose also seem to have an antispasmodic action on the bronchi and bronchioles. This was demonstrated by La Grotteria, who utilized this method in the treatment of two cases of whooping cough. The technic utilized by Professor Lo Monaco consists of a daily intramuscular injection of 4 or 5 gm. of sugar or two injections of 2.5 gm. each. In persons emaciated by long sickness, in order not to cause pain, a few cubic centimeters of cocain solution are sometimes added to the solution. The solution is prepared by dissolving 5 gm. of saccharose in 5 c.c. of sterilized, distilled water.

In commenting on the treatment, the *Riforma medica* (1918, **34,** 354) says:

> The advantages of this new medication of the bronchi are truly notable, in addition to the fact that it avoids disturbing the gastro-intestinal functions, which is such a frequent drawback to the administration of drugs to act on the expectoration. The sugar treatment can be continued as long as desired, because it is harmless, to say nothing of the advantages of the sugar as a source for energy, developing a goodly number of calories in the intra-organic metabolism.
>
> In the tuberculous this method of treatment is of preeminent importance because even in the gravest cases it reduces the bronchial secretion and thus diminishes the cough and the annoying night sweats. On the side of prophylaxis, this new remedy, which, by the way, is entirely Italian in its inception, is destined to prove useful likewise, as if the expectoration is diminished there will not be so much sputum scattered about and hence there will not be so much chance of contagion from this vehicle of infection, the most dangerous and the most certain of all.

It is reported that the National Board of Health of Mexico is intending to organize free dispensaries to apply this treatment. One has already been opened in the capital, at the headquarters of the National Board of Health. It is in charge of Dr. M. Casas. It is also reported that this method is being tried in Italy in some of the sanatoriums for tuberculous soldiers and in France at the Bligny military tuberculosis sanatorium.

DIGESTIBILITY OF RAW WHITE OF EGG

To the Editor:—On the question in the subjoined paragraph; quoted from a recent publication, there seems to be a wide diversity of opinion among chemists and dietitians:

"Raw white of egg is much less digestible than cooked, and frequently causes diarrhea when taken regularly. Egg yolk, on the other hand, is easily digestible and is all utilized, whereas only 50 to 75 per cent. of raw white is assimilated."

May I have your opinion on this subject?

A. E. H., Illinois.

ANSWER.—This subject was discussed editorially in THE JOURNAL, Sept. 22, 1917, p. 1006. The supposed easy digestibility of raw white of egg was perhaps based on the observations of Dr. William Beaumont on Alexis St. Martin. Native egg white, he found, leaves the stomach very rapidly as compared with other foods. This observation does not take into account the subsequent fate of the substance after leaving the stomach. Bateman, and Mendel and Lewis, as well as other experimenters, have noted the poor utilization of egg white when fed to experimental animals, and its tendency to produce diarrheas. Bateman found that it was decidedly indigestible for dogs and when fed in any considerable quantities invariably caused diarrheas and sometimes vomiting. It was found also to be poorly utilized, and after tolerance was established to it in the animals it could be recovered unchanged from the feces, so that it was believed to be assimilated to the extent of not more than 85 per cent. It has been found to have a similar action in some persons, and its utilization in them has been found to be as low as 50 per cent. Reaching the large intestine in the unchanged state in considerable quantities, it may very well serve as a pabulum for putrefactive bacteria. This does not apply to the coagulated egg white cooked at a temperature of about 70 C., which removes the partial indigestibility and changes the egg white into a readily assimilable product. While perhaps raw egg may not be toxic in the correct sense of the word, yet aside from its indigestibility in contrast to the yolk of eggs, which seems t[illegible] and utilized, "the reputed relation of excess of egg white to renal damage, and the frequent hypersensitiveness to its proteins, offer additional reasons for debating the wisdom of the liberal use of raw eggs."

THE DETERIORATION OF ARGYROL SOLUTIONS, AND FLUIDEXTRACT OF ERGOT

To the Editor:—1. How rapidly do solutions of argyrol deteriorate? 2. Does fluidextract of ergot retain its strength indefinitely?

M.D., Binghamton, N. Y.

Answer.—1. The manufacturers of argyrol in their advertising matter repeatedly emphasize the necessity of using a "freshly prepared" solution. They state that office solutions "should be replaced by fresh solutions about every two weeks." Culver (*Jour. Lab. and Clin. Med.*, 1918, p. 487) found that the gonococcidal activity of a 2 per cent. solution exposed at room temperature to ordinary light for two months lost, for a five minute exposure, 75 per cent. of its efficiency. This loss of strength began as early as the third day, and it continued to lose in almost direct proportion to the age. He condemns the practice of having stock solutions, and states that the quantity prescribed for home use of a patient should not exceed a "few days'" supply. It would be better still, if possible, to have the solution prepared daily.

2. This subject has been the occasion for numerous painstaking investigations. A very complete bibliography is given by Eberhardt and Eldred in the *Journal of the American Pharmaceutical Association*, 1914, p. 42. The articles abstracted by these writers indicate that there is some difference of opinion among investigators. It is quite clear, however, that fluidextract of ergot kept under the ordinary conditions prevailing in the physician's office or in a drug store will lose its activity quite rapidly and may become inert within a year.

RANKS AND PAY OF MEDICAL OFFICERS AND OF ARMY CHAPLAINS

To the Editor:—1. Some time last spring you published a list of salaries paid to medical officers in the U. S. Army, their rank, etc. Please give me this information. 2. Can you inform me as to the rank of an Army chaplain and his pay?

L. L. H., Pennsylvania.

Answer.—1. The ranks given to medical officers and the annual pay received are as follows: lieutenant, $2,000; captain, $2,400; major, $3,000; lieutenant-colonel, $3,500; colonel, $4,000; brigadier-general, $6,000 and major-general $8,000. Commutation for quarters: lieutenant $432; captain, $576; major, $720; heat and light: approximately $80, $120 and $160, respectively.

2. A chaplain receives the rank of lieutenant, captain and major, in accordance with his age and qualifications. His salary is the same as that of other officers of similar rank, beginning with lieutenant.

REPORTING FOR DUTY—EQUIPMENT

To the Editor:—I was examined for a commission four weeks ago and so far have heard nothing from it. As I am rather above the average size, I shall have to have my clothes made to order, which requires about ten days. Some of my friends are ordered to report in ten days from the date of the notice, which gives insufficient time in which to become equipped. 1. Should I take the chance and order the uniform now before I have been notified that a commission has been awarded to me? 2. May a man report in civilian clothes? 3. Should the uniform be worn when making the trip to the place at which one is to report? 4. Should a service hat or cap be worn when reporting for duty? Please omit my name.

K. G. E.

Answer.—1. See item, "Medical Mobilization and the War: "Commissions Offered and Orders to Duty on Acceptance," this issue. 2. Yes; but preferably in a uniform, completely equipped. 3. Yes. 4. Either; preferably, the hat.

WHEN MEDICAL OFFICERS MAY WEAR THE UNIFORM

To the Editor:—Is it proper for a doctor to wear his uniform after accepting a commission, or only after orders have been received to report to camp for service?

R. L., Nebraska.

Answer.—It is not proper for medical officers to wear the uniform until ordered to active duty.

Medical Education and State Boards of Registration

COMING EXAMINATIONS

Arizona: Phoenix, Oct. 1. Sec., Dr. Allen H. Williams, 219 Goodrich Bldg., Phoenix.

Arkansas: Little Rock, Nov. 12-13. Sec., Regular Bd., Dr. T. J. Stout, Brinkley, Ark.; Sec., Eclectic Bd., Dr. C. E. Laws, 803½ Garrison Ave., Ft. Smith.

California: Sacramento, Oct. 21-24. Sec., Dr. C. B. Pinkham, Butler Bldg., San Francisco.

Colorado: Denver, Oct. 1. Sec., Dr. David A. Strickler, 612 Empire Bldg., Denver.

Connecticut: New Haven, Nov. 12-13. Sec., Regular Bd., Dr. C. A. Tuttle, 196 York St., New Haven; Sec., Eclectic Bd., Dr. James E. Hair, 730 State St., Bridgeport; Sec., Homeopathic Bd., Dr. E. C. M. Hall, 82 Grand Ave., New Haven.

District of Columbia: Washington, Oct. 8. Sec., Dr. Edgar P. Copeland, The Rockingham, Washington.

Georgia: Atlanta, Oct. 8-9. Sec., Dr. C. T. Nolan, Marietta.

Idaho: Boise, Oct. 1-2. Sec., Dr. Ray H. Fisher, Rigby.

Kansas: Topeka, Oct. 8-9. Sec., Dr. H. A. Dykes, Lebanon.

Maine: Portland, Nov. 12-13. Sec., Dr. Frank W. Searle, 776 Congress St., Portland, Me.

Massachusetts: Boston, Nov. 12-14. Sec., Dr. Walter P. Bowers, No. 1 Beacon St., Boston, Mass.

Michigan: Lansing, Oct. 8-10. Sec., Dr. B. D. Harison, 504 Washington Arcade, Detroit.

Minnesota: Minneapolis, Oct. 1-4. Sec., Dr. T. McDavitt, 741 Lowry Bldg., St. Paul.

Missouri: Kansas City, Sept. 30-Oct. 2. Sec., Dr. George H. Jones, State House, Jefferson City.

Montana: Helena, Oct. 1. Sec., Dr. S. A. Cooney, Power Bldg., Helena.

Nevada: Carson City, Nov. 4. Sec., Dr. S. L. Lee, Carson City.

New Jersey: Trenton, Oct. 15. Sec., Dr. Alex. MacAlester, 438 E. State St., Trenton.

New Mexico: Sante Fe, Oct. 14. Sec., W. E. Kaser, East Las Vegas.

Oklahoma: Oklahoma City, Oct. 8-9. Sec., Dr. J. J. Williams, Weatherford.

Rhode Island: Providence, Oct. 3. Sec., Dr. B. U. Richards, 315 State House, Providence.

Utah: Salt Lake City, Oct. 7-8. Sec., Dr. G. F. Harding, 405 Templeton Bldg., Salt Lake City.

Dental Colleges Classified

At the annual meeting of the Dental Educational Council of America, held in Chicago, July 31, 1918, a classification of the dental colleges in the United States was completed. The list as just furnished us by Dr. Henry L. Banzhaf, the secretary of the Council, is as follows:

CLASS A

Creighton University, College of Dentistry, Omaha, Neb.
Harvard Dental School, Boston, Mass.
Marquette University, College of Dentistry, Milwaukee, Wis.
Medical College of Virginia, School of Dentistry, Richmond, Va.
North Pacific Dental College, Portland, Oregon.
Ohio State University, College of Dentistry, Columbus, Ohio.
The Thomas W. Evans Museum and Dental Institute, University of Pa.
Tufts Dental College, Boston, Mass.
University of California, College of Dentistry, San Francisco, Calif.
University of Illinois, College of Dentistry, Chicago, Ill.
University of Iowa, College of Dentistry, Iowa City, Iowa.
University of Michigan, College of Dentistry, Ann Arbor, Mich.
University of Minnesota, College of Dentistry, Minneapolis, Minn.
University of Pittsburgh, College of Dentistry, Pittsburgh, Pa.
University of Southern California, College of Dentistry, Los Angeles.
Northwestern University Dental School, Chicago, Ill.

CLASS B.

Colorado College of Dental Surgery, Denver, Colo.
Georgetown University, School of Dentistry, Washington, D. C.
Howard University Dental School, Washington, D. C.
Atlanta-Southern Dental College, Atlanta, Georgia.
Louisville University, College of Dentistry, Louisville, Ky.
Chicago College of Dental Surgery, Chicago, Ill.
Indiana Dental College, Indianapolis, Ind.
Loyola University, School of Dentistry, New Orleans, La.
Tulane University, School of Dentistry, New Orleans, La.
Baltimore College of Dental Surgery, Baltimore, Md.
University of Maryland, Dental Department, Baltimore, Md.
St. Louis University, College of Dentistry, St. Louis, Mo.
Washington University Dental School, St. Louis, Mo.
Kansas City, Dental College, Kansas City, Mo.
Western Dental College, Kansas City, Mo.
University of Buffalo, Dental Department, Buffalo, N. Y.
New York College of Dentistry, New York.
College of Dental and Oral Surgery of New York.
Western Reserve University Dental School, Cleveland, Ohio.
Ohio College of Dental Surgery, Cincinnati, Ohio.
Philadelphia Dental College, Philadelphia, Pa.
Vanderbilt University, School of Dentistry, Nashville, Tenn.
University of Tennessee, College of Dentistry, Memphis, Tenn.
Meharry Dental College, Nashville, Tenn.
George Washington University Dental School, Washington, D. C.

College of Physicians and Surgeons, Dental Dept., San Francisco, Calif.
Baylor University Dental Department, Dallas, Texas.

CLASS C

Lincoln Dental College, Lincoln, Neb.
College of Jersey City, N. J.
Cincinnati College of Dental Surgery, Cincinnati, Ohio.
Texas Dental College, Houston, Texas.

Connecticut July Examination

Dr. Charles A. Tuttle, secretary of the Connecticut Medical Examining Board, reports the practical and written examination held at New Haven, July 9-10, 1918. The examination covered 7 subjects and included 70 questions. An average of 75 per cent. was required to pass. Of the 23 candidates examined, 17 passed and 6 failed. The following colleges were represented:

College		Year Grad.	Per Cent.
	PASSED		
Yale University		(1918)	77.9, 79.6, 84.7, 85.3
Georgetown University		(1918)	79.6, 85.9
Johns Hopkins University		(1917)	76.2, 77.3
University of Maryland		(1916)	75.1
Harvard University		(1918)	75.2
Tufts College Medical School		(1918)	75, 79.7
Columbia University	(1913) 82.1; (1917) 79.6;	(1918)	83.9
Cornell University		(1918)	81.9
University and Bellevue Hosp. Med. Coll.		(1918)	79.5
	FAILED		
College of Phys. and Surg., Los Angeles		(1912)	63.6
University of Louisville		(1917)	71
Tufts College Medical School		(1918)	68.7
Jefferson Medical College		(1905)	67.5
University of Vermont		(1914)	67.1
National University, Athens		(1911)	57.3

Connecticut Homeopathic July Examination

Dr. E. C. M. Hall, secretary of the Connecticut Homeopathic Medical Examining Board, reports the written examination held at New Haven, July 9, 1918. The examination covered 7 subjects and included 70 questions. An average of 75 per cent. was required to pass. One candidate was examined, who passed. One candidate was licensed by endorsement. The following colleges were represented:

College	PASSED	Year Grad.	Per Cent.
Hahnemann Med. Coll. and Hosp. of Philadelphia		(1918)	79

College	LICENSED BY ENDORSEMENT	Year Grad.	Endorsement with
Hahnemann Med. Coll. and Hosp. of Philadelphia		(1911)	New York

Connecticut Eclectic July Meeting

Dr. James E. Hair, secretary of the Connecticut Eclectic Medical Examining Board, reports that 2 candidates were licensed through reciprocity at the meeting held at New Haven, July 9, 1918. The following colleges were represented:

College	LICENSED THROUGH RECIPROCITY	Year Grad.	Reciprocity with
Eclectic Medical Coll. of the City of New York		(1907)	New York
Eclectic Medical Institute		(1906)	Texas

District of Columbia July Examination

Dr. Edgar P. Copeland, secretary of the Board of Medical Supervisors of the District of Columbia, reports the oral and written examination held at Washington, July 9-11, 1918. The examination covered 16 subjects and included 80 questions. An average of 75 per cent. was required to pass. Of the 16 candidates examined, 14 passed and 2 failed. One candidate was licensed through reciprocity. The following colleges were represented:

College		Year Grad.	Per Cent.
	PASSED		
Georgetown University		(1918)	82.8, 89.9
George Washington University		(1918)	80.5, 81.2, 85.5, 88.6, 89.1
Howard University	(1915) 85.8; (1917) 80.3, 82.4, 86.1;	(1918)	79.4, 85.8, 88.4.
	FAILED		
Howard University		(1907)	59.1
University of Maryland		(1917)	70.7

College	LICENSED THROUGH RECIPROCITY	Year Grad.	Reciprocity with
Georgetown University		(1908)	Maryland

Book Notices

Surgery of the Spine and Spinal Cord. By Charles H. Frazier, M.D., Sc.D., Professor of Clinical Surgery and Surgeon to Hospital of University of Pennsylvania. With the collaboration of Alfred Reginald Allen, M.D., Associate in Neurology and Neuropathology, University of Pennsylvania. Cloth. Price, $8. Pp. 971, with 386 illustrations. New York: D. Appleton & Co., 1918.

As one reads the pages of this book, one does so with a sense of increasing satisfaction. The bringing together of the essentials of anatomy, normal and pathologic physiology, various methods of examination and the surgery of the cord in one volume is an enormous undertaking and one for which the medical man and the surgeon should thank the man who has accomplished it. The chapter on spinal tumors is interesting and complete. There is a feeling of increased optimism in treatment after reading this portion of the work. In the section on surgery of the spinal roots the discussion of gastric crises in tabes dorsalis and operative relief is dwelt on at length in the hope of better things in the future development of this field of surgery. This monograph is one of the hopeful signs in American medical literature. The author has limited himself to a definite field and dealt with it so comprehensively that the volume should stand as a landmark for some time to come.

Thyroid and Thymus. By André Crotti, M.D., F.A.C.S., LL.D., Surgeon to Grant and Children's Hospitals, Columbus, Ohio. Half morocco. Price, $10. Pp. 567, with 129 illustrations. Philadelphia: Lea & Febiger, 1918.

This work presents in a fairly satisfactory manner a general review of the thyroid and thymus questions, but it cannot be said that anything materially new has been added to our knowledge of the subject. The book reminds one very much of a basket of berries in which all the good ones are placed on the top layer. It has a beautiful mottled red cover and heavy glazed paper, both of which may add to the cost of the book without increasing its value.

The Control of the Drink Trade. A Contribution to National Efficiency, 1915-1917. By Henry Carter. With a preface by Lord D'Abernon. Cloth. Price, $2.50 net. Pp. 323, with 19 illustrations. New York: Longmans, Green & Co., 1918.

In this interesting study of a great social and economic problem, the author describes the conditions that led the British government to regulate the use and sale of alcoholic liquors in Great Britain—a measure dictated by military necessity. The development of complete national control is traced from the early days of the war when work in the shipyards, in the munitions factories and in the transport areas was greatly hampered by drinking among the battleship workmen, crews, dock laborers and porters. The control began in a limited area of Great Britain, but as it was soon found that liquor was easily obtained from a zone outside this area, the regulation was extended by 1917 to every part of the island. The hours during which drink might be sold were curtailed by more than one-half the usual day in Scotland and by about two-thirds the usual day in England and Wales. Treating was prohibited, spirits were diluted, "credit" trade in liquor was cut off, and registered clubs were placed under the same regulations as licensed liquor houses. The control board did not confine its work to restrictive action, however. The author devotes some interesting pages to its constructive activities, which include regulation of the public sale of food served without intoxicating liquors; improvement of licensed houses, on the theory that more wholesome surroundings will promote temperance; the establishment of rival attractions, such as bowling greens, reading rooms and moving pictures, and provision for the holding of trade union meetings elsewhere than on licensed premises. Among the results of government regulation, the author emphasizes increased sobriety, a decrease in the number of convictions for drunkenness and of attempted suicides, and above all, a marked decline in the death rate not only from alcoholism but also from cirrhosis of the liver. In 1916, when national regulation became general, the number of certified deaths from alcoholism was 47 per cent. less, and that from cirrhosis of the liver was 26 per cent. less than in 1914. As a guide to other countries wishing to make what has been called "the greatest social experiment of modern times," the book should be most valuable.

Social Medicine, Medical Economics and Miscellany

State Care of Mental Defectives

According to a survey of Nassau County, New York, made by Dr. A. J. Rosanoff in 1916, the proportion of mental defectives to the general population is one in every 183 people. This large proportion is not alarming, in view of the fact that a considerable percentage of these defectives are not seriously enough affected to require institutional care. They do, however, need medical and psychologic advice from trained specialists in mental diseases, and in his interesting study of "The Problem of the Mental Defective and the Delinquent," Dr. C. L. Carlisle points out how this aid may be the most effectively given in state clinics for mental hygiene. He recommends that these clinics, unlike both public and private clinics already established, be kept open daily. They should not be considered as interfering in any way with the development of institutional clinics, which have a special field limited by the needs of their respective institutions. They should be distributed throughout the state with reference to the needs of the adjacent population. They should provide advice and treatment for the patients, educate the parents and friends of the patients on topics of mental hygiene, and act as a clearing house for cases subject to examination for state institutions and as a way station for patients discharged from those institutions. Each clinic should be directed by a well educated physician with general hospital experience, as well as experience in mental and nervous disorders, whose appointment should come as a result of a civil service examination. In addition, there should be a field worker for each clinic, also under civil service regulations, for the purpose of investigating family histories, following up paroled patients, and the like. The chief of the clinic should try to enlarge its field of usefulness by delivering lectures to the general public and bringing technical facts before the medical profession and facts of sociologic value before lay and civic bodies. One of its duties should be the proper disposal of patients brought before it, some of whom must be sent to hospitals for the insane, and others of criminal tendencies back to the courts for trial. In discussing the treatment of patients, Dr. Carlisle condemns the use of "disciplinary" measures, strong rooms and restricted diet as punishment, urging that such measures are antiquated and that "modern therapeutic methods adapted to abnormal mental states must be used." In order that the state may always know the number of mental defectives within its borders, he recommends a system of registration covering the various recognized fields of genetics and personality, under the auspices of the state board of charities.

Color Blindness

Studies were made by Dr. George L. Collins for the U. S. Public Health Service to determine the comparative value of the Jennings worsted skein tests and the Edridge-Green lantern test for color blindness, and to determine the effect, if any, of refractive conditions, lesions and anomalies of the eye, and also the effect of sex on different degrees of color perception. The examinations were made as a part of other studies of the effect of illumination on vision, conducted as a part of an illumination survey of the federal department buildings in Washington, D. C.

The Jennings test is a modification of the Holmgren test, and like it uses for test skeins, first, a green test skein of the color corresponding to that part of the spectrum in which those with abnormal sense for red or green see a neutral band, and secondly, a test skein of rose color made by dyeing the worsted with blue and red. The Edridge-Green lantern has seven slides containing specially prepared colored glasses and six others containing modifying glasses which may be placed in front of the colored glasses to simulate mist, fog or rain, and produce their modifying effects on signal lights in actual practice. The test is constructed on the principle of presenting colors which, while very easily named by the normal sighted, are most liable to be miscalled by the color blind.

Comparing the results of the Jennings test with the Holmgren tests, both tests detected the markedly color-blind dichromic, and both tests failed to detect the individual with shortening of the red end of the spectrum. Thirty-two persons either with normal color sense or with only such slight defects as to permit them to be passed as not color blind, and who passed the Holmgren test, made mistakes of some kind with the Jennings test. From this it would appear that persons who should be passed as of normal or nearly normal color sense are more apt to be rejected by the Jennings than by the Holmgren test.

The results of the test were too confusing to permit of definite diagnostic interpretation or to be considered final in determining accurately and definitely the presence of dangerous color blindness. The results were so contradictory as to make it impossible to decide whether a person could be considered fit for passing or should be rejected. Nothing more than a general idea was to be deduced from the results. It would appear that the Jennings test is quite inferior to the lantern tests, and the results are more confusing, more irregular, and more difficult of interpretation than those of the Holmgren test. It is impossible to lay down definite rules for the examiner to use in deciding when the examinee should be accepted or rejected, as can be done with the lantern tests. It may be concluded, then, that the Jennings test is not adapted for testing sailors and trainmen, and that its use in that way is dangerous. Collins believes, however, that this test has a distinct function, particularly during the present general state of warfare, and that it is an exceedingly ingenious and acceptable addition to the many forms of color testing apparatus now at our disposal.

The Elimination of Quinin by the Urine

Working with the urine of troops in the East, Porak (*Journal of Tropical Medicine and Hyiene*, 1918, **21,** 138) found that from 30 to 40 per cent. of ingested quinin was excreted in the urine, and further, that in cases under continuous treatment the cycle of elimination was comparable from day to day. There are three stages in the elimination of quinin; in the initial and terminal stages only traces are found, but in the middle stage, generally from the fourth to the tenth hour after absorption, there is a much increased elimination. In health the periods and modes of elimination are the same, no matter what the dose or mode of administration. When there are gastro-intestinal disturbances, such as vomiting and diarrhea in severe cases of malaria, quinin merely irritates the mucous membrane without being absorbed; hence giving it by mouth is contraindicated. In slight renal diseases there is but little change in quinin excretion. In severe nephritis, however, the alkaloid appears but slowly in the urine, and there is no third stage of elimination. When there is an enlargement of the liver in malaria it seems as if there is diminished retention by this organ, for the second stage of elimination in the urine comes on earlier. In cardiac insufficiency or decompensation only traces of quinin are found in the urine. In several cases of typhoid and leukemia, Porak found no alterations in the elimination of the drug. There is a marked diminution in the elimination of quinin in certain cases of malaria with cachexia and anemia. With improvement, the curve of elimination approaches normal, while if the condition of the patient becomes worse the elimination decreases. As the kidney is but slightly affected in malaria as a rule, and as the quinin rapidly disappears from the blood, there must be some fixation or retention in the organs in such cases. This retention appears to cause no harm, provided not more than 2 gm. are given daily.

In view of these observations it appears that for optimal effect it would be best in most cases to give quinin every three or four hours in approximately 0.25 gm. doses, preferably by mouth, except when there are gastro-intestinal disturbances, and here subcutaneous or intermuscular injection is indicated. Needless to say, the daily 2 gm. should be exceeded in cases of pernicious and primary malaria. The intravenous method should be employed in pernicious cases. The quinin treatment should be continued for several consecutive months with frequent intermissions, and the elimination by the urine should be watched.

Medicolegal

Rights and Duties Under Employer's Contract to Furnish Medical Services

(Crites v. Willamette Valley Lumber Co. (Ore.), 169 Pac. R. 339)

The Supreme Court of Oregon affirms a judgment in favor of the plaintiff, a former employee of the defendant company who sued it to recover $125 which he paid a surgeon for an operation and treatment when he had an attack of appendicitis and the company physician was out of town. The company had posted a notice which stated that in consideration of a hospital fee charged employees, each employee was entitled to full medical and surgical attendance and necessary medicines and appliances for the treatment of any injuries or sickness, all medical and surgical attendance to be furnished by the company physician or surgeon. The court says that the following facts and the legal conclusions resulting therefrom might be taken as indisputable: First, that the notice posted by the defendant and the payment by the plaintiff to it of the fees specified constituted a complete contract requiring the defendant to furnish the services of its physician to the plaintiff under the circumstances mentioned; second, that it was the duty of the plaintiff to apply for such service before employing another physician; third, it was the duty of the plaintiff to use reasonable diligence to find the company physician and request his services before employing another physician, and if he failed to use such diligence he could not hold the defendant. Whether or not he used such diligence was a question of fact for the jury to determine.

If the party requiring the services of a physician was ignorant as to who the physician was, it was his duty to inquire and ascertain from the company that employed him; but when the name and place of business or residence of the physician was known the injured should apply at the place where, under all the circumstances, it was reasonable to suppose the physician might be found. In this case the company physician had an office and a young woman attendant; also had his telephone so connected with that of an adjoining drug store that any call for his office also rang up the drug store, the employees in which in his absence were accustomed to give such information as to his whereabouts as might be necessary. But the plaintiff's wife went to the physician's residence at about 8 a. m., when it would be only reasonable to assume that he would be at his residence rather than at his office, and was informed that he was out of town. At 1:30 p. m. she went to a neighbor's and called up the physician's residence over the telephone, and was again informed that he was absent. Becoming alarmed concerning the plaintiff's condition, she called in the other surgeon. Under the circumstances the court is not prepared to say that there was any such lack of diligence on the part of the plaintiff, or his wife, as would preclude a recovery in this case.

There is no rule for the construction of this species of contracts different from the rules that apply generally to all contracts. So far as the defendant was concerned, it was in writing, and by its terms the defendant promised absolutely to furnish the services of its physician in case of sickness or injury. It was not a contract to furnish the services of its physician in the event he could be reached or was available, but to furnish his medical services when needed. The court does not wish to be understood as holding that under all circumstances it would be obligatory on the employer to have a physician at hand at the very hour or minute his services were required, or be responsible for the services of some other physician whom the employee might secure. The right to apply to another physician must depend on the circumstances and the urgency of the case. A man with a boil on his person might reasonably wait for a day for the service of a physician, while one suffering from a severe attack of appendicitis would be rash to wait for a single hour. The "rule of reason" applies here, as in all cases of a similar character. To say that having bought and paid the company for this service in advance, the plaintiff should be required to pay for it a second time and stand the loss, because the company was not in a position to furnish it, would not be just and would be to apply to this contract a rule not applied to other contracts.

Leaving Pad in Drainage Gauze—Admissible Evidence—Defining "Operation"

(Barrett's Administrator v. Brand (Ky.), 201 S. W. R. 331)

The Court of Appeals of Kentucky, on the second appearance before it of an appeal from a judgment for the defendant, affirms such judgment, in this action for alleged malpractice in an operation for chronic ovaritis. The court says that the patient showed signs of dissolution, and the cavity was hurriedly closed up to prevent it. A gauze drainage was arranged, and in it was one of the gauze pads, which was discovered four days later by the wound being opened up, at which time some of the parts, including some of the smaller intestines, were found to be inflamed and the patient shortly died. The chief act of negligence complained of was that of leaving the pad in the patient; but under the evidence and instructions of the court the jury found that this was not an act of negligence, or, if it was, it could not be termed the proximate cause of the patient's death.

It was insisted that there was error in permitting the professional witnesses to state, in substance, that the case was practiced according to the approved methods of the medical profession, and that, according to the opinions of those witnesses, the patient, in her diseased and run-down condition, would have died, and as a matter of fact did die, from those conditions, notwithstanding there might have been negligence in the manner complained of. It is, of course, fundamental that although an act may be negligent and involve a violation of duty, still, before a cause of action can be predicated thereon, the injury flowing therefrom must have been the proximate result of such derelictions. While it was not denied in this case that the pad was overlooked and left in the patient's body, yet it was clear that it was confined in the drainage gauze, which was an essential and necessary part of the operation, and it was therefore not in a condition to produce injurious consequences. But, however that might be, the rule is that while an expert witness may not take the place of the jury by stating whether certain acts constitute negligence, he may give his opinion in regard to matters which require scientific or specialized knowledge or experience, and for which the general common sense and practical experience of the jury are inadequate. The defendant's expert witnesses were permitted to state whether in their opinion the case was practiced according to the approved methods of surgery, but they were not asked, nor were they permitted to state, whether any particular act done or omitted to be done was or was not a careless or negligent one. According to the court's view, there is quite a distinction between whether a case has been practiced according to the rules of surgery and whether those rules or any of them are dictated by the soundest prudence and the most careful considerations. A case might be practiced according to such approved methods of surgery, and still not be characterized by careful and prudent action, and the court is clearly of the opinion that the complained of questions and answers did not invade the province of the jury and were proper subject-matters of injury of the expert witnesses.

Objection was made to evidence given by some of the assisting physicians concerning statements made by the defendant relating to the conditions which he found, and other subjects connected with the operation, during and while he was performing it. But this objection was untenable because the evidence complained of constituted a part of the res gestae or essential circumstances of the case growing out of the main transaction, which was the operation, and serving to explain it.

It was claimed in regard to the instructions that the court should have defined what constituted an operation, that is, that the court should have said to the jury in its instructions that the operation commenced at the beginning of making the incision and ceased when the incision was closed; but this court does not regard the term "operation" to be one of such technical meaning as to require a definition at the hands of the court. Every act necessary to its performance is included within the known meaning of the term.

Burden of Proof in Prosecution for Unlawfully Practicing Medicine

(Denton v. State (Tex.), 201 S. W. R. 183)

The Court of Criminal Appeals of Texas, which reverses a judgment of conviction of defendant Denton and remands the cause, says that the conviction was for practicing medicine in violation of Article 750 of the Penal Code, which makes it unlawful for any one to practice medicine "who has not registered in the district clerk's office of the county in which he resides, his authority for so practicing, . . . verified by oath." The statute also contains a statement that the clerk shall indorse on the certificate the fact that the oath has been made and recorded, and concludes as follows:

> The holder of the certificate must have the same recorded on each change of residence to another county, and the absence of such record shall be prima facie evidence of the want of possession of such certificate.

There was no evidence introduced to the effect that the defendant's authority had not been registered as required by the statute. It is not unlawful to practice medicine, but it is unlawful to do so without compliance with the statute. The offense is the practice of medicine without compliance with the statute, and the burden is on the state to prove the offense. There will be found decisions of other states holding that, under certain circumstances, the burden of making proof of authority to practice medicine is not on the state because a fact within the peculiar knowledge of the accused. Such is not the case here, as the statute itself prescribes a rule of evidence making the absence of the record prima facie evidence of the want of such certificate; and requiring that the certificate be recorded in the county in which the accused is residing at the time renders it easy for the state to make the proof of records of the particular county. The failure to make the proof in this instance characterized the evidence as insufficient. But the defendant's suggestion that the evidence showed that the occupation in which he was engaged was that of a masseur and exempted by Article 754 of the Penal Code from the provisions of Article 750 could not, the court thinks, be sustained as a matter of law. The character of his occupation was a question of fact.

Society Proceedings

COMING MEETINGS

American Association of Railway Surgeons, Chicago, Oct. 16-18.
American Public Health Association, Chicago, Oct. 14-17.
Assn. for S. & P. of Inf. Mort., Asheville, N. C., Nov. 11-14, 1918.
Delaware State Medical Society, Wilmington, Oct. 8.
Mississippi Valley Medical Assn., St. Louis, Mo., Oct. 2-4, 1918.
New Mexico Medical Society, Albuquerque, Oct. 7-8.
Ohio State Medical Association, Columbus, Oct. 1-3.
Southern Medical Association, Asheville, N. C., Nov. 11-14, 1918.
Vermont State Medical Society, Burlington, Oct. 10-11.
Virginia State Medical Society, Richmond, Oct. 22-25.
West Virginia State Medical Association, Martinsburg, Oct. 1-3.
Wisconsin State Medical Society, Milwaukee, Oct. 2-4.

Current Medical Literature

AMERICAN

Titles marked with an asterisk (*) are abstracted below.

American Journal of Diseases of Children, Chicago

September, 1918, **16,** No. 3

1 *Immunity Reactions in Hydrated and Concentrated Tissue. F. W. Schlutz, Minneapolis.—p. 135.
2 Congenital Atresia of Esophagus: Report of Four Additional Cases. J. Brennemann, Chicago.—p. 143.
3 Kala-Azar in Child (the First American Case). F. B. Talbot and A. B. Lyon, Boston.—p. 154.
4 *Cure of Syphilitic Meningitis (Developed After Head Injury) by Arsphenamin and Mercury. I. M. Snow, Buffalo.—p. 161.
5 Psychogenic Disturbances in Childhood and Their Treatment. A. Strauch, Chicago.—p. 165.
6 Head Shaking with Nystagmus in Infants. C. Herrman, New York.—p. 180.
7 *Effect of Injections of Pituitary Solution on Urinary Output in Case of Diabetes Insipidus. S. W. Clausen, St. Louis.—p. 195.

1. **Immunity Reactions in Hydrated and Concentrated Tissue.**—The work Schlutz reports was undertaken to show whether there was any difference in the defensive mechanism of hydrated or concentrated tissue, using determinations of immune reactions as an index. The lysin reaction was compared in fifteen fat animals and eighteen lean animals. The animals were immunized against blood cells by intraperitonal inoculations. About 0.25 c.c. of washed blood cells were injected intraperitoneally at from two to three day intervals. Two weeks following the third or fourth injection the animals were exsanguinated, the blood allowed to clot, and then centrifuged in order to separate the serum from the clot. The serum was then diluted with salt solution 1:10, and its lytic titer determined in the usual way. The precipitin reaction was carried out on eleven fat and eleven lean animals. The animals were treated with from 0.25 to 0.5 c.c. of ascitic fluid or human blood serum intraperitoneally as was done with the lysin pigs. The precipitin titer of the serum was then determined by the dilution method. The agglutination was determined in seven fat and seven lean animals. The procedure was much the same as in the precipitin reaction. Pigs were inoculated intraperitoneally with a twenty-four hour killed culture of the typhoid bacillus. Four injections were made at three or four day intervals. Ten days following the last injection the titer of the serum was determined by the dilution method. The lysin reaction was negative or nearly so in practically all of the fat animals, but was positive, sometimes to a marked degree, in over 60 per cent. of the lean pigs. The precipitin reaction was uniformly negative in both the fat and lean series. The agglutinin reaction, while present in only 11 per cent. of the fat animals, was positive in over 70 per cent. of the lean animals. The lysin and agglutinin reaction would seem to indicate that there is a difference in favor of concentrated tissue and that the theoretical considerations expressed by Czerny and other observers are substantially correct.

4. **Syphilitic Meningitis Cured by Arsphenamin and Mercury.**—A boy, 10 years of age, was well up to March 1, 1917, when he fell from the roof of a standing freight car, striking on his head. After the accident he seemed in great pain for several hours. During the night he had a chill and vomited until morning. Two weeks later he commenced to have crying attacks and twitching and pain in the left arm. These emotional attacks increased in severity and were associated with convulsions, which occurred every second night. Four months after the injury (July 10) the patient entered the hospital as a case of epilepsy. During the first ten days of his stay he had one convulsion, frequent screaming attacks and periods of maniacal excitement. He cried, swore and talked incoherently, and complained of pain and muscular twitching in his left arm. After a few days it was noticed that his movements were awkward and constrained; that he held his head and back very rigidly, the head being inclined to the right. The knee jerks were very active; ankle clonus of right leg; Kernig sign present, most marked on right side;

muscles of arms and legs very spastic. The pupils were widely dilated; reacted to accommodation but not to light. There was a double optic neuritis of 2 diopters, each side. Leukocytes, 9,350; hemoglobin, 80 to 90 per cent. The spinal fluid contained 406 cells per cubic millimeter. Globulin and albumin were each + + + +; Wassermann, + + + +. The father and mother each showed a Wassermann + +. The child was evidently suffering from a syphilitic cerebrospinal meningitis. He was given daily inunctions of mercury and arsphenamin every one or two weeks. After the first dose of arsphenamin there was a prolonged chill and fever of 102 F., the only rise of temperature in the disease. About December 24, the Wassermann was negative, and the optic neuritis had disappeared. The boy was sent home and attended school regularly. In April he complained of frequent momentary headache. The spinal fluid, however, was negative to the Wassermann and colloidal gold tests. About May 1, the optic disks were normal. On May 14, fourteen months after the beginning of symptoms, the child was free from all symptoms and had been for seven months. Neither the parents nor the child had any symptoms of syphilis, hereditary or acquired. The fall on the head acted as a provocative agent causing cerebrospinal symptoms in a case of presumably latent hereditary syphilis. The lesion in the cerebrospinal meninges was probably a proliferative gummous leptomeningitis involving the cortex and spinal meninges; also an ependymitis with an increase of cerebrospinal fluid and some hydrocephalus. The choked disks were due to intracranial pressure from fluid and not to a direct inflammation of the optic nerve. Decompression and aspiration were followed by no immediate relief save that the lessening of intracranial pressure gave the cerebral circulation a little more freedom. The patient was very responsive to treatment; the acute symptoms lasted about three months. Mercurial inunctions were given every day for five months and arsphenamin at first every week; later every two weeks.

7. **Effect of Pituitary Solution on Urinary Output in Diabetes Insipidus.**—A study was made by Clausen of the urinary output of a 9½ year old boy suffering from diabetes insipidus, as influenced by injections of pituitary solution. Following injections of from 0.25 to 1 c.c. of surgical pituitary solution, there is a marked diminution of the urine volume. This diminution persists for from five to six hours, sometimes much longer. The volume of night urine is reduced when pituitary solution is injected at any time on the preceding day. The hourly rate of elimination of chlorids is always reduced after injections of pituitary solution. The hourly rate of elimination of urea is usually only slightly, if at all, reduced by injection of pituitary solution. The hourly rates of elimination of creatinin and uric acid are only slightly reduced by injection of pituitary solution. The hourly rate of elimination of titratable acids in the urine is only slightly influenced by these injections. The hourly rate of elimination of no substance studied is increased by injections of pituitary solution. When the hourly ingestion of water and sodium chlorid or urea is maintained at a constant high level, the urea elimination is quite uninfluenced by the injection of pituitary solution, whereas, the chlorid elimination is considerably diminished, and the water elimination very much diminished. Pituitary solution injections in diabetes insipidus control urine output primarily and thirst secondarily.

American Journal of Obstetrics and Diseases of Women and Children, York, Pa.

September, 1918, 78, No. 3

8 *Significance of Fever at Time of Labor. J. M. Slemons, New Haven, Conn.—p. 321.
9 *Cystocele: Review of Literature, Report of an Operation for Its Relief. R. M. Rawls, New York.—p. 328.
10 *Cancer of Cervix Complicating Triplet Pregnancy. B. P. Watson, Toronto, Canada.—p. 347.
11 Pathogenesis and Further Growth of Carcinoma of Uterus in Relation to Clinical Symptoms and Early Diagnosis. I. C. Rubin, New York.—p. 353.
12 Elusive Ulcer of Bladder. Twenty-Five Cases of Rare Type of Bladder Ulcer. G. L. Hunner, Baltimore.—p. 374.
13 Treatment of Puerperal Blood Stream Infections with Arsenobenzol; Report of Cases. H. A. Miller and S. A. Chalfant, Pittsburgh.—p. 395.
14 *Graduate Degree in Obstetrics and Gynecology. J. C. Litzenberg, Minneapolis.—p. 404.
15 *Study of Fifteen Hundred Selective Cases of Myomata Uteri. L. Broun, New York.—p. 410.
16 *Final Results of Roentgen Ray Treatment of Fibroids of Uterus. J. Brettauer, New York.—p. 415.
17 Use of Neutral Solution of Chlorinated Soda in Suppurative Conditions Within Peritoneal Cavity. R. R. Huggins, Pittsburgh.—p. 423.
18 Study of Dystrophy Adiposa Genitalis in Women. E. A. Schumann, Philadelphia.—p. 428.
19 Complete Laceration of Perineum. G. M. Boyd, Philadelphia.—p. 434.
20 Two Cases of Placenta Previa with Identical History, Suggesting Common Etiologic Factor. J. S. Taylor, Washington, D. C.—p. 438.

8. **Fever at Time of Labor.**—The histologic picture presented by the placenta was studied by Slemons in thirty-four cases. Typically, the bacteria are found in the subamniotic connective tissues where they come in contact with the large fetal blood vessels which cross the surface of the placenta. Occasionally, it is possible to demonstrate bacteria in the act of penetrating the walls of the vessels. In most instances the epithelium covering the villi is intact; the capillaries within the villi are normal and bacteria are not demonstrable on the surface or in the interior of the villi. Under these circumstances, it is evident that the infection does not proceed from the maternal circulation and does not pass through the walls of the villi. Bacteria enter the placenta by way of the amniotic membrane and the amniotic fluid. Generally, the latter becomes infected because the membranes rupture prematurely, labor is prolonged and repeated vaginal examinations are made. In one series of 600 labors, Slemons noted placental bacteremia in ten instances; and in another series of 1,000 labors it occurred twenty-four times. On this basis, he estimates its frequency as 2 per cent. of all labors at term. In other words the incidence of placental bacteremia and of intrapartum fever is identical. Slemons urges that as a matter of routine, the placenta should be subjected to careful examination, especially in hospital practice. The examination should not be limited to the gross study of the organ to determine its weight, dimensions and complete separation from the uterus. Portions should be selected for microscopic study. Placental bacteremia explains a great many of the fetal and infant deaths heretofore impossible of explanation.

9. See abstract in The Journal, April 13, 1918, p. 1118.

10 and 14. Abstracted in The Journal, June 22, 1918, p. 1976.

15. *Myomata Uteri.*—All of the 1,500 patients whose cases were analyzed by Broun had some form of hysterectomy or myomectomy. As a result of the operations, twenty-eight patients (1.86 per cent.) died; of these seven died from embolus, chiefly between the eighth and twentieth day, seven from peritonitis, and the remainder from various causes. Sixty-six malignant conditions were found. There were fifty-eight cases of associated ovarian pathology. There were 265 cases of associated tubal disease, the majority of which would have required at some time surgical interference. Tuberculous endometritis was present in two instances, and in 105 myomas, necrotic or calcareous changes were present. One hundred and sixty-seven chronic or subacute inflammatory appendixes were found. There were nine instances of associated extra-uterine pregnancy and fifty-one of normal pregnancy. Three hundred and fifty-five cases, 23.7 per cent., contraindicated the use of radium and roentgen ray. The average therefore of 23.5 per cent., or practically one out of every four patients seeking relief from symptoms resulting from the presence of uterine myoma, have also some other pathologic condition that would contraindicate the use of radium and roentgen ray. After a review of the cases and noting the coincident conditions, Broun is convinced that the symptoms on account of which the majority of patients entered the hospital were due in the greatest measure to conditions outside of the uterus and not to the presence of the tumor itself, unless it was from hemorrhage. That radium and roentgen ray have their field in gynecology is unquestionable. Broun believes, however, that this field should be limited to cases in which it is inadvisable to do any form of

operation and to hemorrhage of myopathic origin or from small and absolutely uncomplicated myomas of the uterus.

16. **Roentgen Therapy of Fibroids of Uterus.**—This report covers a series of thirty-two cases of fibroids up to Oct. 1, 1917, which were subjected to massive roentgen-ray exposures on account of severe menorrhagia. The tumors varied in size, some reaching above the umbilicus and filling the entire abdomen. All were under observation and the diagnosis positively established before treatment was instituted. Permanent amenorrhea resulted in twenty-five, or 78 per cent., and temporary amenorrhea in seven, or 22 per cent. Four of the seven patients were between 30 and 40 years of age and the character of the uterine bleeding was that of a scanty regular menstruation; in the other three, the flow was very irregular, small in amount and occurred at intervals of from three to six months. In nearly every case a decided reduction in the size of the uterus was perceptible; in some no vestige could be detected of former large fibroids. Brettauer concludes that at an age below 45 the roentgen-ray treatment for fibroids should not be the choice, but should be employed only when operative measures are not advisable or are refused. Between the ages of 45 and 55, roentgen-ray treatment should be the method of choice and no patient should be deprived of the right to undergo it. Uterine hemorrhages due to fibroids in women beyond the age of 55 should raise a suspicion of sarcomatous degeneration and operative measures are preferable to any other form of treatment.

Illinois Medical Journal, Chicago

August, 1918, 34, No. 2

21 Work of American Medical Association in World War. J. W. Van Derslice, Chicago.—p. 57.
22 Plastic Surgery. L. Ryan, Chicago.—p. 64.
23 Diagnosis and Treatment of Tuberculosis of Kidney. D. N. Eisendrath, Chicago.—p. 71.
24 Menopause from Standpoint of Mental Disorder. F. P. Norbury, *Springfield, and A. H. Dollear, Jacksonville.—p. 77.*
25 Auricular Fibrillation. J. C. Carr, Chicago.—p. 83.
26 Some Undesirable Results Produced by Some Present Health Laws as Now Enforced. A. E. Mowry, Chicago.—p. 87.

Journal of Experimental Medicine, Baltimore

September, 1918, 28, No. 3

27 Bovine Mastitis: Relation of Hemolytic Streptococci to Udder Infections. F. S. Jones, Princeton, N. J.—p. 253.
28 *Etiology of Epidemic Poliomyelitis. E. T. H. Tsen, New York. —p. 269.
29 Production of Acid by Pneumococci. G. E. Cullen and A. M. Chesney, New York.—p. 289.
30 *Influence of Temperature on Velocity of Complement Fixation Reaction in Syphilis. H. Noguchi, New York.—p. 297.
31 *Restorative Effect of Salts of Magnesium and Calcium After Lethal Doses of Sodium Oxalate. F. L. Gates, New York. p. 305.
32 *Urobilin Elimination in Normal and Anemic Dog. H. Dubin, Philadelphia.—p. 313.
33 Modifications of Culture Media Used in Isolation and Differentiation of Typhoid, Dysentery and Allied Bacilli. I. J. Kligler, New York.—p. 319.
34 *Experimental Test of Nuzum's Antipoliomyelitic Serum. H. L. Amoss and F. Eberson, New York.—p. 323.
35 Pleomorphic Bacillus from Pneumonic Lungs of Calves Simulating Actinomyces. T. Smith, Princeton, N. J.—p. 333.
36 Optimum Hydrogen Ion Concentration for Growth of Pneumococcus. K. G. Dernby and O. T. Avery, New York.—p. 345.
37 *Determination of Quantity of Secreting Tissue in Living Kidney. C. K. Watanabe, J. Oliver and T. Addis, San Francisco. —p. 359.

28. **Etiology of Epidemic Poliomyelitis.**—Streptococci have been isolated by Tsen and his associates from the central nervous system of monkeys dead of poliomyelitis and from the central nervous system of monkeys dead of other causes, as well as from the brains of normal rabbits. Streptococci isolated from poliomyelitic monkeys do not differ from those isolated from monkeys and rabbits dead from other causes. An etiologic relation has not been established between streptococci and poliomyelitis. Several times an organism was isolated that was similar to the globoid bodies culturally, morphologically, and in staining reaction, but it could not be carried along for more than three generations. The pathogenicity of these organisms has therefore not been tested on monkeys. Typical lesions of poliomyelitis were not produced in rabbits by the injection of either the poliomyelitic virus or streptococci.

30. **Effect of Temperature on Complement Fixation Reaction in Syphilis.**—*Noguchi says that the examination of syphilitic serum or cerebrospinal fluid can be made at any temperature between 23 and 37 C. The velocity of the fixation reaction, including the fixation of complement and subsequent hemolysis, is greater at a higher temperature, the optimum point being 37 C. The maximum reaction is also reached, however, when the mixture of lipoids, syphilitic serum, and complement is allowed to stand for a long enough period at a lower temperature, the minimum thermal point being near 23 C. For the optimum temperature (37 C.) an incubation of thirty minutes is sufficient, while for the minimum temperature (23 C.) two hours are necessary. At the temperature 30 C. the reaction proceeds with moderate velocity and is complete within sixty minutes. Guinea-pig complement gave a sharper reaction with the serums which contained less than one unit of the fixing substance. Fixation is complete, however, at any of the three temperatures within twenty minutes when there are more than two units present. A serum containing one unit of fixing substance will complete reaction within thirty minutes at 37 C., sixty minutes at 30 C. and two hours at 23 C., irrespective of whether human or guinea-pig complement is used. For many reasons a properly adjusted thermostat for 37 C. is recommended for conducting the serum diagnosis of syphilis when possible, but it should not be overlooked that at a temperature near 30 C. an entirely reliable result can be obtained without a special incubator. Even at a temperature as low as 23 C. the test can be carried out if sufficient length of time is allowed. These conclusions refer only to the systems in which the acetone insoluble fraction of tissue lipoids is used as antigen.*

31. **Restorative Effects of Salts of Magnesium and Calcium.**—The experiments presented by Gates brought out the following facts. Intramuscular injections of sodium oxalate into rabbits in doses of 0.18 and 0.2 gm. proved to be invariably fatal, death generally occurring in a comparatively short time. The symptoms consisted in excitation and tonic and clonic convulsions of diminishing strength if death was delayed. Some animals succumbed in the first convulsion. From the experiments in which magnesium or calcium was added, it was evident that massage of the site of the oxalate injection is unmistakably an aggravating factor. In the experiments with the addition of magnesium or calcium, doses of 0.2 gm. of ovalate were used, with or without massage. There was practically in all cases clear evidence that the effect of the additional injections was in the nature of an antagonism to the oxalate effects. An injection of 0.6 gm. of magnesium not only alleviated or abolished the excitation and convulsions, characteristic of oxalate poisoning, but also reduced the mortality by 30 per cent. When the dose of magnesium was only 0.4 gm. per kilogram of body weight and the site of the injection of the oxalate was not massaged—a condition in which 0.2 gm. of oxalate alone was invariably fatal—the mortality was reduced by 80 per cent. The favorable effect of injections of calcium chlorid depended on the quantity injected and the length of the interval elapsing between the injection of the oxalate and that of the calcium. When the site of the oxalate was massaged and only 5 c.c. of the calcium solution were injected, the animals succumbed to the oxalate poisoning. When 10 c.c. of calcium were given one minute after the oxalate injection, the animals survived. When the site of the oxalate injection was not massaged, then even 5 c.c. of the calcium were sufficient to save life.

32. **Urobilin Elimination.**—*Dubin found that the output of urobilin is increased in experimental trypanosome anemia, presumably as a result of the increased blood destruction. The administration of arsphenamin during the anemic period, if it checks the blood destruction, reduced the urobilin elimination, but this result does not follow unless the blood picture improves. Following splenectomy in the normal dog an increase in the urobilin elimination of varying degree occurs, the significance of which is doubtful. Splenectomy during the period of anemia does not cause a decrease in*

urobilin elimination. The experiments support the view that the elimination of urobilin may be considered as an index of blood destruction, but they do not explain the decrease in the elimination occurring in man in certain forms of hemolytic anemia following splenectomy.

34. **Nuzum's Antipoliomyelitic Serum.**—The value, in general, of antistreptococcic serums in combating streptococcus infections is unproved. The antistreptococcic serum of Nuzum and Willy has failed to show in the monkey neutralizing or therapeutic power when applied by their methods against small doses of the virus of poliomyelitis. Under the same conditions the serum of monkeys recovered from experimental poliomyelitis proved neutralizing and protective. The experimental and other evidence adduced by those who regard the streptococcus as playing an essential part in the pathology of epidemic poliomyelitis and the antistreptococcic serums as exhibiting therapeutic properties for man and monkeys is regarded by Amoss and Eberson as being imperfect and inconclusive.

37. **Quantity of Secreting Tissue in Living Kidney.**—Under the strain induced by the administration of urea, the authors were able to demonstrate the relation between the degree of anatomic damage in the kidney and the degree of defect in the urea-excreting capacity induced by uranium. The closest correlation between structure and function was obtained when the ratio between the urea content of the urine and of the blood was used as the measure of function.

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38 *Precipitin Reaction in Urine in Pneumonia. W. J. Quigley, Chicago.—p. 217.
39 *Effect of Culture Medium on Agglutinative Properties of Bacillus Paratyphosus B. R. Victorson, Chicago.—p. 220.
40 *Methyl Red and Voges-Proskauer Reactions with Special Reference to Routine Water Analysis. W. D. Stovall and M. S. Nichols, Madison, Wis.—p. 229.
41 *Respiratory Stimulant and Toxic Substance Extractable from Lung Tissue. W. B. Wherry and D. M. Ervin, Cleveland.—p. 240.
42 Food Accessory Factors (Vitamins) in Bacterial Culture. D. J. Davis, Chicago.—p. 248.
43 *Sporotrichosis Following Mouse Bite. J. J. Moore and D. J. Davis, Chicago.—p. 253.
44 *Cultivation of Tubercle Bacilli from Sputum by Petroff's Method. H. J. Corper, L. Fiala and L. Kallen, Chicago.—p. 267.
45 *Brilliant Green Agar and Other Plating Mediums for Isolation of Typhoid and Paratyphoid Bacilli, from Feces. C. Krumwiede, Jr., L. A. Kohn, A. G. Kuttner and E. L. Schumm, New York.—p. 275.
46 *Thermal Death Point and Limiting Hydrogen Ion Concentration of Pathogenic Streptococci. S. H. Ayers, W. T. Johnson, Jr., and B. J. Davis.—p. 290.
47 *Study of Neutralizing Properties of Antipoliomyelitic Horse Serum. J. W. Nuzum, Chicago.—p. 301.
48 *Protective Properties of Antipoliomyelitic Horse Serum. J. W. Nuzum, Chicago.—p. 309.

38. **Precipitin Reaction in Urine in Pneumonia.**—Quigley has made study of the sputum for the type of infection, and of the urine for precipitin reactions in 100 cases of lobar pneumonia due to the pneumococcus, occurring in Chicago during the winter of 1917-1918. There were 33 instances of infection with pneumococci of Type I, 36 of Type II, 13 of Type III, and 18 of Type IV. Of eighty-two cases of Types I, II and III, the urine of sixty-seven showed at some time during the disease a specific precipitin reaction. The strength of the reaction gradually increased during a period of three or four days, persisted from two to nineteen days, and gradually disappeared. It was present during the third week in a few convalescents when discharged from the hospital. Thirty of the 100 patients died. The group mortality was approximately 39, 36, 8 and 17 per cent., respectively, for the four types. Of the twenty-seven deaths due to Types I, II and III infections, twenty-three showed a precipitin reaction in the urine; four were negative. Of the sixty-seven showing a precipitin reaction twenty-three, or 34 per cent., died. Of the fifteen with negative reactions four, or 27 per cent., died. It therefore appears that a large percentage of fatal cases of pneumonia have a substance in the urine capable of giving a specific precipitin reaction with antipneumococcus serum, but that the presence of this substance in the urine is not of great unfavorable prognostic value, as the mortality when it could not be demonstrated was only slightly lower than when it was present.

39. **Effect of Culture Medium on Agglutinative Properties of B. Paratyphosus B.**—The effect of the medium on the agglutination of *B. paratyphosus* B was studied by Victorson. The mediums tested were sugar-free agar as a control medium, 10 per cent. rabbit blood agar, Loeffler's serum, 1 per cent dextrose and 1 per cent. lactose broth and agar, potato, and Jordan's nonprotein medium to which was added 1.5 per cent. agar. The reaction of the sugar mediums and sugar-free agar was 0.5 per cent. acid to phenolphthalein. The organism was transferred forty-four times. The following results were obtained: Each strain, as a rule, agglutinated better with its homologous serum than with any heterologous serum. The serum produced by the potato strain, however, was an exception, since it agglutinated the organisms grown in dextrose broth and on Loeffler's serum better than its own strain. The variations in agglutination were not marked, consisting merely of slight differences in the highest dilutions to which the strains are agglutinated.

40 **Methyl Red and Voges-Proskauer Reactions.**—In the routine analysis of sixty-eight water samples from private and public supplies received from many sections of the state Stovall and Nichols isolated 200 cultures which fulfilled the requirements of the completed test for members of the colon group of organisms of the Standard Methods of Water Analysis. They found that 120 of these reacted acid to methyl red, thirty-eight gave a Voges-Proskauer positive reaction, and that forty-two gave irregular reactions. The intensity of these reactions varied considerably.

41. **Toxic Substance from Lung Tissue.**—The method described by Wherry and Ervin of producing accelerated respiration or death was discovered accidentally in an experiment with tuberculous tissue from a rabbit's lung. A piece of the tissue, 6 by 8 mm., filled with tubercles, was ground up with sand, suspended in 8 c.c. of 0.9 per cent. sodium chlorid solution, centrifuged to remove coarse particles, and 1 c.c. of the supernatant fluid injected intravenously into another rabbit, which immediately fell on its side with marked inspiratory dyspnea, followed by convulsions and opisthotonos, and died a few second later. Rabbit lung is more fatal for the rabbit than for the guinea-pig and vice versa. Many of the symptoms of anaphylactic shock are produced—the acceleration of the respiration and peripheral irritation, both best shown by sublethal doses, the inspiratory dyspnea, the convulsions, the tolerance produced by graded repeated doses, the delay in the coagulation of the blood, all make one think of a possible relationship to anaphylaxis, but the lungs collapse on opening the thorax. Atropin does not protect. Morphin does not protect. Similar extracts of rabbit liver, kidney, ileum and spleen were harmless for rabbits. The lethal agent will not pass Berkefeld filter N at 600 mm. pressure. It is removed by animal charcoal. It is not extracted by ether. It can be removed by centrifugal force (36,000 revolutions per minute) and is apparently composed of, or adsorbed to, particles visible under the microscope. By beginning with a sublethal dose, and then injecting at short intervals thereafter larger doses, a rabbit will survive, without symptoms, several lethal doses. The authors are inclined to favor the idea that colloidal particles are responsible for the lethal action.

43. **Sporotrichosis Following Mouse Bite.**—An instance of an infection with *Sporotrichum schenckii* following the bite of a field mouse in North Dakota is described by Moore and Davis. The infection has persisted for about eighteen months, improving with administration of iodid and relapsing when the iodid is discontinued. Repeated sporo-agglutination tests gave positive results at serum dilutions varying from 1:320 to 1:80. At one time, when the patient had almost recovered, the test was slight at 1:20, but later became stronger. In general this test parallels the clinical course. Complement fixation tests made at various times generally yielded definitely positive results, corresponding thus to the agglutination

tests. In the icebox the antibodies in the serum retain their activity for over one year.

44. **Cultivation of Tubercle Bacillus from Sputum.**—Investigations were made by Corper and his associates to obtain cultures of tubercle bacilli for the study of their virulence and to gain information on the various steps involved in the technic of cultivating tubercle bacilli according to the method devised by Petroff. The routine cultivation of tubercle bacilli from microscopic positive sputum by Petroff's method, seeding two gentian violet egg medium tubes from each *sputum*, resulted in obtaining positive macroscopic cultures of varying grades on primary culture from 144 (27.3 per cent.) of 526 sputums. There was noted no relationship between the number of bacilli found in the original sputum and the percentage of positive growths obtained or their intensity. Egg medium prepared as directed by Petroff with fresh beef juice revealed no particular advantages over mediums in which was substituted sodium chlorid, beef extract, and peptone as used in ordinary broth. The inspissation of the Petroff gentian violet egg medium on three successive days also proved to have no advantages over a single autoclaving. Petroff's findings that the gentian violet egg medium is not suitable for the continued cultivation of tubercle bacilli was corroborated (24 per cent., six of twenty-five, failing to grow on two tubes in the first seeding and 43 per cent., six of fourteen, failing to grow on two tubes in the second seeding).

45. **Isolation of Bacilli of Typhoid Group from Feces.**—Since describing a method of preparing a brilliant green agar plating medium for the isolation of typhoid and paratyphoid bacilli from feces, the number of specimens examined by the authors has reached 7,111. Of this number 920 were endopositive and 1,235 were dye-agar positive. The results in the isolation of *B. paratyphosus* have been somewhat better than in the isolation of *B. typhosus.*

46. **Thermal Death Point of Pathogenic Streptococci.**—The thermal death point of twenty-seven strains of pathogenic streptococci from pathologic sources was never higher than 60 C. (140 F.) when heated in milk for thirty minutes. This fact seems to indicate that pathogenic streptococci are destroyed by the proper pasteurization of milk at 60 C. (140 F.) for a period of thirty minutes.

47. **Neutralizing Properties of Antipoliomyelitic Serum.**—Nuzum claims that antipoliomyelitic horse serum, prepared by repeated intravenous injections of the coccus isolated from the central nervous system in human and monkey poliomyelitis possesses neutralizing properties against the virus of poliomyelitis. The neutralizing properties of antipoliomyelitic horse serum in vitro for the virus of poliomyelitis afford a convenient and satisfactory test of the potency of this serum for use in the treatment of poliomyelitis. The neutralizing, protective and curative properties of antipoliomyelitic horse serum for experimental poliomyelitis of monkeys are in direct accord with the favorable results observed in the serum treatment of human poliomyelitis and argue strongly for the etiologic relationship of the coccus to this disease.

48. **Protective Properties of Antipoliomyelitic Serum.**—Nuzum has applied the therapeutic test, recently devised by Amoss and Eberson, to fresh samples of immune horse serum prepared by injections of the poliomyelitic coccus in the horse. Under the conditions of the test, three monkeys were completely protected while the fourth animal developed mild symptoms on the fourteenth day and subsequently recovered completely. The control monkeys receiving normal horse serum all developed a fatal poliomyelitis and died as early as the fourth day following injection of virus. Fresh immune horse serum protected perfectly against infection while pooled immune monkey serum served only to delay the onset of a fatal infection.

Kentucky Medical Journal, Bowling Green

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49 Toxemic Convulsions. B. F. Robinson, Berea.—p. 418.
50 Case of Dementia Praecox. H. B. Scott, Louisville.—p. 420.
51 Two Obscure Cases of Intracranial Infection. A. O. Pfingst, Louisville.—p. 422.

Minnesota Medicine, St. Paul

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52 Changes Ahead. M. L. Burton, Minneapolis.—p. 327.
53 Differential Diagnosis and Modern Treatment of Idiopathic Pernicious Anemia. J. P. Schneider, Minneapolis.—p. 334.
54 Comparison of Various Tuberculin Tests in Childhood. E. F. Warner, St. Paul.—p. 337.
55 Medical Cooperation in Problem of War Syphilis. J. H. Stokes, Rochester.—p. 341.

New Orleans Medical and Surgical Journal

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56 Ruptured Gastric and Intestinal Ulcers. H. W. Kostmayer, New Orleans.—p. 125.
57 Society Largely Responsible for Some of Most Potent Factors of Nervous and Mental Diseases. J. C. King, Atlanta, Ga.—p. 132.
58 Vomiting in Infancy. L. R. DeBuys, New Orleans.—p. 141.
59 Minor Matters. H. D. Bruns, New Orleans.—p. 145.
60 Biologic Research on Wounds of War; Phenomena of Proteolysis in Wounds of War. A. Policard.—p. 154.

Pennsylvania Medical Journal, Athens

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61 Health Hazards to Women as Result of War Emergency. S. Semple, Harrisburg.—p. 661.
62 How Industrial Surgeon Can Best Cooperate with Government to Win War. E. Martin, Washington.—p. 665.
63 Nation's Neglect; Failure to Reconstruct and Rehabilitate Wounded in Industry. L. A. Shoudy, Bethlehem.—p. 668.
64 The Way Out. A. H. Samuels, Washington, D. C.—p. 671.
65 Hernia: Should It Be Classed as Compensable Injury or Disease? A. W. Colcord, Clairton.—p. 672.
66 Does Two Years' Experience with Workmen's Compensation Law of Pennsylvania Demand Its Amendment, and if So, How? From Viewpoint of the Board. H. A. Mackey, Harrisburg.—p. 684.
67 Id.: From Viewpoint of Physician. F. L. Van Sickle, Olyphant.—p. 687.
68 Id.: From Viewpoint of Insurance Company. W. H. Hotchkiss, New York.—p. 693.
69 Id.: From Viewpoint of Industry. C. B. Auel, East Pittsburgh.—p. 697.

Surgery, Gynecology and Obstetrics, Chicago

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70 *Injuries of Cervical Spine. J. Ransohoff, Cincinnati.—p. 241.
71 Utility of End-to-End Anastomosis Between Small and Large Intestine. D. C. Balfour, Rochester, Minn.—p. 249.
72 Etiology of Ureteral Calculus. G. L. Hunner, Baltimore.—p. 252.
73 Recurrence of Stone in Kidney. C. R. Robins, Richmond, Va.—p. 270.
74 *Management of Subparietal Injuries of Kidney; Report of Cases. J. M. Mason, Birmingham, Ala.—p. 277.
75 Medical Profession and Great War. W. D. Haggard, Nashville, Tenn.—p. 281.
76 *Treatment of Certain Forms of Subacute Pancreatitis. S. H. Watts, University, Va.—p. 286.
77 Surgery of Soft Parts, Bones and Joints, at a Front Hospital. E. H. Pool, B. J. Lee and P. A. Dineen, France.—p. 289.
78 Transplantation of Bone in Repair of Cranial Defects. C. H. Gilmour, Toronto.—p. 311.
79 Problems of Reconstruction of Hand. A. Steindler, Iowa City, Iowa.—p. 317.
80 *New Operation for Prolapse of Uterus. C. U. Collins, Peoria.—p. 326.
81 *Practical Value of Electric Light in Treatment of Infections. A. J. Ochsner, Chicago.—p. 328.
82 Bone Graft and Arthrodesis in Reconstruction Surgery. F. G. Dubose, Selma, Ala.—p. 331.
83 Technic of Ureterovesical Anastomosis. H. D. Furniss, New York.—p. 339.
84 *Bunion, Its Causes and Cure. H. A. Robinson, Kenosha, Wis.—p. 343.
85 Cranial Decompression for Head Injuries Accompanied by Signs of Increased Intracranial Pressure. R. L. Payne, Jr., Norfolk, Va.—p. 345.
86 *New Operation for Cure of Femoral Hernia. J. W. Dowden, Edinburgh, Scotland.—p. 348.

70 and 74. Abstracted in The Journal, Feb. 2, 1918, p. 341.

76. Abstracted in The Journal, Feb. 9, 1918, p. 414.

80. **Operation for Prolapse of Uterus.**—Collins sutures a transverse strip of the anterior aponeurosis of the abdominal rectus into the cervical trough formed after a supravaginal hysterectomy. The stumps of the broad ligaments are sutured to the posterior surface of the cervix and to each other. The cervix is thus held securely in the abdominal wall by a strip of aponeurosis that will not stretch and cannot come loose

from its attachments, because they are natural and have not been separated.

81. **Value of Electric Light in Treatment of Infections.**—Ochsner directs attention to the great value of electric light rays, especially because of their influence in controlling pain due to infection. He has used this method in seventy-eight cases of infection of the extremities, and invariably the pain has disappeared promptly. Sixty-one of these cases were infections of the upper extremity, and seventeen of the foot. Equally satisfactory results were obtained in the use of the electric light in treating peritonitis following abdominal sections for the relief of suppurating conditions such as appendiceal abscesses, perforated gallbladder, etc., also in tuberculous and gonorrheal joint infections, in carbuncles and furuncles. In case of roentgen-ray burns the light treatment causes a rapid improvement of the conditions.

84. **Bunion, Its Causes and Cure.**—Robinson claims that enlarged sesamoids are the cause of bunions. The two sesamoids which develop normally under the head of the first metatarsal bone enlarge and grow downward and outward toward the head of the second metatarsal, and as the plantar fascia is tough it resists the sesamoids and with each step pushes them upward and inward and causes the head of the metatarsal to give in the line of least resistance, which is upward and inward. Because there is no pressure inward on the proximal phalanx of the great toe, it is held firmly by the strong ligaments and gradually the head of the metatarsal is displaced inward. This turns the great toe outward toward the other toes until in may cases the head is almost completely dislocated from the articular surface of the phalanx. Roentgenograms show that this dislocation corresponds to the size of the sesamoids. Bunion occurs on top of the foot when the sesamoids are enlarged and point straight downward toward the sole of the foot. The tough plantar fascia forces the sesamoids upward against the head of the metatarsal so as to displace it perpendicularly upward and the phalanx being held firmly to the tendon is not displaced. This produces a bunion on top of the foot. The cure in both cases is the same, namely, removal of both sesamoids. By way of preventive surgery, Robinson advises the removal of both sesamoids as soon as the first symptoms of bunion are discovered.

86. **Operation for Femoral Hernia.**—The principle of Dowden's operation is the placing of a ball of fat or other tissue, bigger than the abdominal aspect of the femoral ring, and fixing the ball in situ, the ligated sac of the hernia being displaced above the ball. The result of this is that the greater the intra-abdominal pressure, the more this ball is forced against the femoral ring, this effectually closing it.

FOREIGN

Titles marked with an asterisk (*) are abstracted below. Single case reports and trials of new drugs are usually omitted.

Indian Journal of Medical Research, Calcutta

April, 1918, 5, No. 4

1 *Study of Kala-Azar. J. W. Cornwall and T. K. Menon.—p. 541.
2 Some Results in Kala-Azar. R. Knowles.—p. 548.
3 Bilharziosis Among Animals in India. Life-Cycle of Schistosomum Spindalis. W. G. Liston and M. B. Soparkar.—p. 567.
4 *Biochemistry of Postcholeraic Uremia. Blood in Cholera Patients. J. A. Shorten.—p. 570.
5 *Action of Liquor Calcis on Comma Vibrios. J. C. Mukherji. —p. 608.
6 Thorax and Wing of Mosquito (Anopheles). B. Prashad.—p. 610.
7 Development of Dorsal Series of Thoracic Imaginal Buds of Mosquito; Phylogeny of Insects. B. Prashad.—p. 641.
8 *Margosic Acid and Its Salts in Syphilis and Skin Diseases. K. K. Chatterji and C. Ray.—p. 656.

1. **Study of Kala-Azar.**—Pure subcultures of the flagellates of *Leishmania tropica* and of *L. donovani* were readily obtained by Cornwall and Menon by inoculating N N N tubes from the stomachs of infected bugs up to ten days from the date of the feed. No subcultures of the flagellates of *L. donovani* could be obtained from the rectal contents of bugs from three to thirty-three days after an infected feed. No subcultures could be obtained from the rectal contents when the infected bugs had fed on a normal rabbit in the interval. No resistant forms could be detected microscopically in the rectal contents of bugs infected with *L. donovani*. Neither leukocytes nor erythrocytes remain stranded in the bug's sucking tube after a feed. The authors suggest that kala-azar may perhaps be transmitted by the rupture of an infected bug on an excoriated skin, but proof is wanting.

4. **Blood of Cholera Patients.**—A new method of preparing urease from Soya beans and new methods of determining the percentage of inorganic phosphates and chlorids in the blood serum are described by Shorten. Studying the blood of cholera patients Shorten found that there is a definite increase in the urea content of the blood in all cases of cholera of more than a few hours' duration. In cases which recover, there is an increase to a maximum in a few days, and then a gradual decline to normal. In fatal cases of postcholeraic uremia a very high percentage may be reached before death. On the other hand, retention of urea would seem to have nothing to do with the symptoms of this so-called uremia. The figures for nonprotein nitrogen follow those for urea more or less closely. It would appear that an excess of nitrogenous metabolites in the blood is not responsible for the symptoms in these cases. The observations on the variations of the alkalinity of the blood confirm the previous work of Sir Leonard Rogers. The occurrence of phosphatic retention in these cases is definitely established. It corresponds in a general way to diminution in the alkalinity—a high phosphatic content being usually found with low alkalinity and vice versa. Postcholeraic uremia is a misnomer. The condition really is a retention acidosis, as shown by the diminished alkalinity, phosphatic retention, and peculiar type of dyspnea. The concomitant retention of urea and other nitrogenous metabolites does not appear to be of any importance, except in so far as it denotes abeyance of the functions of the kidneys. Improvement in treatment resolves itself into measures directed toward controlling phosphatic retention.

5. **Action of Liquor Calcis on Comma Vibrios.**—It would appear from Mukherji's bacteriologic experiments that liquor calcis is distinctly inimical to the growth of comma vibrios if used in sufficient quantity.

8. **Margosic Acid and Salts in Syphilis and Skin Diseases.**—After passing the oil derived from Nim seeds (Margosa tree) through various chemical processes, a chemist obtained margosic acid and sent Chatterji 4 ounces of a 15 per cent. alcoholic solution. Later, he prepared the calcium and zinc salts of this acid. These were found to be insoluble in water. Local application of them in powder, and as an ointment, prepared from them with petrolatum and lanolin, to syphilitic ulcers and tuberculous sinuses caused rapid healing. The ulcers showed a healthy healing margin after two or three applications. The chemist also prepared for Chatterji the sodium salt of the acid, sodium margosate. Intramuscular injections of this salt did not produce any toxic effects. Intravenous injections were followed by a sharp reactionary rise of temperature, but there was no other toxic effect. Investigations with the margosates show that along with their strong parasitotropic properties they have the advantage of possessing very low organotropic properties. The phenol co-efficient of the soluble salts of margosic acid has been determined to be only two. Laboratory experiments show, therefore, that the antibacterial or bactericidal property of the drug, is low, in vitro, but clinical evidence appears to show that this property is not inconsiderable in vivo. The Nim is a reputed remedy for skin affections and, in view of the parasitotropic properties of the margosates, they have been used in a number of cases of scabies, eczema and pemphigus with remarkably good results.

The margosates are strongly antiprotozoal in their action. A solution of 1 in 2,000 killed Paramecium instantly and a much weaker solution of 1 in 10,000 killed the flagellate Prowazekia. In the treatment of syphilis, clinical experience proved its value. Sodium margosate was given in solution, the doses varying from 0.01 to 0.325 gm., subcutaneously, intramuscularly or intravenously in the primary, secondary and tertiary stages of syphilis, also in parasyphilis and congenital syphilis. In the primary and secondary stages the initial lesion and secondary manifestations disappeared under its influence much more readily than in untreated cases. In the late secondary and tertiary stages the skin lesion, gummas, etc., soon subsided. A case of parasyphilis showed marked improvement. In congenital syphilis, the condylomas, ulcers, eye lesions, etc., yielded rapidly to treatment with the margosates. Incidentally Chatterji observed some aspects of the physiologic action of the drug. For example, it caused leukocytosis which was maintained for over a week after a single injection. It is not known how the margosates produce these results.

Indian Medical Gazette, Calcutta

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9 Metamorphosis and Standardization of Licensed Medical Practitioner. R. Bryson.—p. 201.
10 Importance of Some Minor Eye Operations. J. N. Macphail.—p. 205.
11 *Treatment of Thirty Lepers with Sodium Gynecardate "A." E. Muir.—p. 209.
12 Case of Syphilitic Fever. E. H. Wright.—p. 213.
13 Some New Principles in Nutrition. R. F. E. Austin.—p. 214.
14 Forgotten Pages of Jail History. J. Mulvany.—p. 216.

11. **Leprosy Treated with Sodium Gynecardate "A."**—This report is made by Muir after three months' treatment. A 3 per cent. solution of sodium gynecardate "A" in distilled water, with 1 per cent. of pure phenol and 1 per cent. of sodium citrate, was prepared, and sterilized by boiling in a flask immersed in another vessel containing water. Of this solution, from 0.5 c.c. up to 5 c.c. was given thrice weekly, intravenously. Tablets of the same drug were given by mouth, but it was not always found possible to give these regularly, and so far as could be judged the oral administration made little or no difference. The principle adopted was to begin with 0.5 c.c. and increase the dose by 0.5 c.c. each time, giving the injections thrice weekly. Anesthesia was present in all the patients. There were marked tubercular nodules in twenty cases. One patient after a few injections developed dysenteric diarrhea and the treatment had to be stopped. He, however, made some improvement, and the treatment is being resumed with care. Three patients, who had been ill, five, four and eighteen years, respectively, have entirely lost all traces of anesthesia and the nodular swelling which was found in the last of these has practically disappeared. The most rapid progress was recorded in the youngest patients and in those who had been ill for the shortest time; but this latter does not always hold, as the disease may advance more rapidly in some cases than in others. Many of the patients felt very weak at the end of the three months, but they were extremely cheerful. Muir has used leprolin in the treatment of leprosy for some years, and obtained improvement in many cases and the entire disappearance of anesthetic patches in a few initial cases. The original gynecardate of soda prepared under Sir L. Rogers' instructions gave better results than leprolin. Sodium gynecardate "A," however, has given vastly superior results to either of these.

Annales de Médecine, Paris

March-April, *1918*, **5**, No. *2*

15 *Soldier's Gastritis with Hyperchlorhydria. M. Loeper and G. Verpy.—p. *97*.
16 *Central Neurofibromatosis. G. Humbert and F. Naville.—p. 108.
17 *Wounds of Spine with Intact Dura. Guillain and Barré.—p. 115
18 Typhoid Lesions in Arachnoid. R. Lutembacher.—p. 148.
19 *French Sprochetosis. N. Fiessinger.—p. 156.
20 Paratyphoid with Epilepsy. Pagniez and Vallery-Radot.—p. *179*.
21 Spirochetoses. R. Dujarric de la Rivière.—p. 184.

15. **Soldier's Gastritis with Hyperchlorhydria.**—Loeper and Verpy have encountered seventy-two cases of this type among 135 cases of dyspepsia in soldiers. The symptoms indicate *actual gastritis*, the result of repeated functional hyperstimulation. Restriction to a nonirritating diet, milk, potatoes and sugar, aids in recuperation. Solutions of sugar are soothing, they induce by their concentration a mucous exudation, and they supply calories. The highly sweetened diet recommended in cases of gastric ulcer is particularly useful here, as it tends to reduce gastric secretion. Among the active measures, emptying the stomach and rinsing it with weak solutions of bicarbonate are effectual, also ingestion half an hour before meals of some alkaline solution, phosphates, sulphates, with *sodium citrate.* Also a suspension of bismuth carbonate taken fasting.

16. **Central Neurofibromatosis.**—Bilateral central deafness is common with this disease; Henschen declares that there are always two neuroma on the eighth pair of nerves. This was the case in the sixteen instances he has compiled, but in the family here described only the father presents this bilateral deafness. The two sons are deaf only on one side. One son of 32 has a neurofibroma on the optic nerve and retina, visible with the ophthalmoscope since the age of 7. The brother died at 18 and the father at 31.

17. **Paraplegia After Wounds of Spine with Intact Dura.**—Fifteen cases are described of organic paraplegia following a war wound of the spine, but in which the dura was found intact. The points which distinguish between the set of symptoms from total section of the cord and those from a focal lesion are an extensive plantar skin reflex on both or even on one side, conservation of sensibility over an area, even if quite limited, and pain when the thigh is flexed at the hip. Lumbar puncture shows when there is subarachnoidal hemorrhage.

19. **French Spirochetosis.**—The clinical picture may resemble that of catarrhal jaundice or of meningitis with myalgia and nausea, the symptoms subsiding after lumbar puncture, or it may appear as war nephritis, trench foot, or as an infectious disease of unknown nature. A. Pettit was the first to insist that the spirochete involved is not identical with Inada's icterohemorrhagic spirochete in Japan. The spirocheturia with the latter appears only after defervescence, not until after the first week, while in the French spirochetosis, spirocheturia was pronounced from the first to the fourth day in the Lorient epidemic. In the sporadic cases the spirocheturia is tardy. The French spirochete is also longer, with more twists, and guinea-pigs seem absolutely immune to it. The serum of patients contains no immunisins against the Japanese spirochete. The French spirochetosis is essentially polymorphous, and includes undoubtedly a number of pyrexias of hitherto unknown origin. It is possible that trench foot belongs in another category, but at present it seems to fit into this elastic frame.

Archives Médicales Belges, Paris

May, 1918, **71**, No. 5

22 Dysentery in 1917 in Belgian Army. P. Nolf and others.—p. 521.
23 Concussion Psychoses. H. Hoven.—p. 540.
24 *Pneumatic Mobilization of Joints. Loveday and Stouffs.—p. 548.
25 *Visual Acuity and Military Service. E. Rasquin.—p. 564.
26 *Disability with Mutilation of Face and Jaws. F. Watry.—p. 583.
27 Psychogenous Motor Psychoses. M. Molhant.—p. 591.

24. **Pneumatic Mobilization of Stiff Joints.**—Eighteen illustrations show the apparatus and the method of use for stiff joints. The principle is the application of pressure by a rubber bag alternately inflated and collapsed by air from a pump worked by an electric motor. The motor is connected with iron piping which has manifold outlets with pinch-cocks at regular intervals, the inflatable bags being connected with these branching tubes. All are inflated simultaneously with the compressed air, for about a minute, and the joints thus get a succession of small efforts at mobilization which aggregate in time enough force to correct the ankylosis. This principle was first applied for massage. It is accomplishing results in the line of mobilization beyond the highest anticipations, it is said, not only for knees, wrists and fingers but for constriction of the jaws, and for the elbow, talipes varus and equinus, etc. Continuous traction accomplishes the same purpose, but the soft parts are rendered anemic in the process, blood and lymph are expelled, and conditions are not favorable for recuperation of function. With the rapid alternating application of force and its release, the soft parts undergo a constant massage as the muscles repeatedly stretch and retract. One unexpected advantage of the method is that it shows up factitious ankylosis. The sittings are given every day or twice a day.

25. **Visual Acuity in Soldiers.**—Rasquin discusses from the military standpoint the evaluation of the disability from reduction of visual acuity.

26. **War Wounds of Jaws and Face.**—Watry discusses the mutilations of jaws and face from the same standpoint of military disability and reduction of the earning capacity.

Bulletin de l'Académie de Médecine, Paris

July 23, 1918, **80**, No. 29

28 *Arteriovenous Aneurysm. L. Sencert.—p. 114.
29 *Hemoptysis after War Wounds of Chest. Courtois-Suffit.—p. 116.

28. **Subclavian Arteriovenous Aneurysm.**—Sencert reports the complete functional recovery after resection of an arteriovenous aneurysm in the subclavian vessels. In order to reach it, he temporarily disarticulated the clavicle.

29. **Hemoptysis After War Wounds of Chest.**—Courtois-Suffit refers to the hemorrhages which occur after a long interval and display a tendency to recurrence after a war wound of the chest. In one of the four cases summarized, the interval was thirty months. Nothing can be found in any of the cases suspicious of tuberculosis, and the recurring hemoptysis is not accompanied by any impairment in the general health. Tuberculosis is proving extremely rare as a complication of war wounds of the chest. He cites seven other hospital physicians, besides himself, who have never encountered an instance of it. The war wound, especially when a foreign body is left in the tissues, may keep up a latent inflammatory process which may bleed at times.

Bulletins de la Société Médicale des Hôpitaux de Paris

May 10, 1918, **42**, No. 16

30 *Gangrene of Uvula in Purpura. L. Galliard.—p. 435.
31 *Lethargic Encephalitis. Lortat-Jacob and Hallez.—p. 439.
32 *Meningitis. M. Beauchant, Baudoin and Dubois.—p. 444.
33 *Trauma and Tuberculosis. A. Lemierre and Lantuéjoul.—p. 449.

30. **Gangrene in Purpura.**—The purpura was relatively mild in the man of 49 but gangrene developed in the uvula and it sloughed off leaving only a stub. Bleeding from the gums had been the first symptom and the uvula was swollen. The physician ordered local treatment with diluted hydrogen peroxid. Netter has reported the cultivation of what seemed to be meningococci in the vesicles in a case of purpura in an infant, as also in several cases in adults, and others have reported gangrene in meningococcus purpuras. Some of the patients recovered without having been given serotherapy. In Elliot and Kaye's case, both feet had to be amputated.

31. **Lethargic Encephalitis.**—The woman of 49 was brought to the hospital because for a week she had not been able to keep awake, and she complained of feeling tired all the time, and there was ptosis of the eyelids. Three weeks before she had suffered for a week from severe headache. The lethargy, the tendency to catatonia and loss of pupil reflex to light gradually subsided in this order. The somnolency in this and similar cases seems to be a symptom of exhaustion, a phenomenon comparable to what occurs in the motor system in bulbar myasthenia.

32. **Puncture of Ventricles in Meningitis.**—The young aviator developed suddenly acute meningitis with violent delirium; serotherapy was pushed for a week without apparent benefit. Then, on account of the aggravation of the symptoms notwithstanding the specific serotherapy, both lateral ventricles were punctured, followed by injection of 10 c.c. of the specific serum in one ventricle and 5 c.c. in the other. Meningococci were found in the 15 c.c. of fluid aspirated from the first ventricle punctured. By the next day improvement was pronounced, and it continued without further setbacks except a subcutaneous abscess at the point where the scalp had been trephined for each puncture of the ventricle. Pure cultures of meningococci were derived from the pus, but recovery continued undisturbed. The facility with which the ventricles can be punctured always astonishes those who try it. In the case reported a fixation abscess had been induced, as this is deemed useful in grave meningitis, and it may have contributed to the favorable outcome.

33. **Traumatism and Tuberculosis.**—In two of the three cases of war wounds of the chest reported, a latent tuberculous process flared up, but in the third case a contusion of the chest was followed by development of acute pleurotuberculosis, almost at once, which seemed to be primary.

Presse Médicale, Paris

July 22, 1918, **26**, No. 41

34 *Access to Base of Neck in Front. R. Le Fort.—p. 373.
35 Papulous and Nodular Forms of Chancre. M. Ferrand.—p. 375.
36 Copper in Treatment of Streptococcus Lesions. A. Mauté.—p. 377.
37 *Osteomyelitis of the Spine. J. Luzoir.—p. 378.

July 25, 1918, **26**, No. 42

38 *Constipation in Men on Active Service. M. Labbé.—p. 385.
39 *Bimanual Percussion. O. Peyret.—p. 387.
40 Febrile Bilious Hemoglobinuria. F. Roux.—p. 390.

34. **Access to the Mediastinum and Neck.**—Le Fort analyzes the different methods that have been proposed for access to the cervicomediastinal space, at the base of the neck, and advocates what he calls the sternocleidocostal flap. The skin is incised along the median line for 10 or 12 cm. to the first intercostal space, and then at right angles to the first incision for 12 or 14 cm. along the intercostal space to the deltoid, thus forming an L. His illustrations show how this avoids mutilation while it affords ample access. By this means he was able to remove without mishap a shrapnel ball just above and back of the aorta which, for sixteen months, one surgeon after another had refused to remove. Except for temporary incision of the sternum—which is a spongy bone and consolidation afterward is rapid and sure—no bone, vessel, nerve or important muscle is injured in the least, the clavicle and its articulation and the sternomastoid being unmolested, while it gives ample access to the organs at the base of the neck, the entire upper mediastinum and the apex of the lung. The integral repair of the chest wall requires only suture of the intercostal space, of the pectoralis and the fibro-aponeurotic plane.

37. **Acute Osteomyelitis of the Spine.**—Luzoir summarizes some recent cases that have been published, emphasizing the vital importance of an early diagnosis. Kirmisson called attention in 1909 to the characteristic oblong shape of the swelling over the inflamed vertebrae, almost spindle shaped. In one of his four cases the swelling along the side of the spine reached from the scapula to the crest of the ilium. Another symptom is the manifest collateral circulation in the region. The temperature is subfebrile, and puncture brings pus with usually the *Staphylococcus aureus* in pure culture. The absence of any tendency to curvature of the spine and the presence of some focus of infection elsewhere aid in differentiating the acute osteomyelitis. In one of the cases cited the spinous processes of the eleventh and twelfth dorsal vertebrae were found denuded, with four perforations in the sacrolumbar aponeurosis. The focus was cleared out and cauterized with phenol neutralized at once with alcohol, and in less than two months the lesion had completely healed. In other cases a subacute, almost chronic course would suggest tuberculosis if it were not for the long outline which is in such contrast to the round Pott's lesion. In other cases the symptoms of septicemia predominate, suggesting typhoid or meningitis. In one such case the young man was being treated for typhoid until the casual discovery of the swelling in the lumbar region. The operation then came too late to save him. Only thorough examination in all cases of supposed typhoid would avert blunders of this kind. In a more recent case the grave general condition and signs of meningeal irritation pointed to meningitis, but the finding of staphylococci in the spinal fluid led to more careful examination of the spine and discovery of the acute osteomyelitis, with recovery after draining the spinal canal. The first symptoms in this case had been acute retention of urine, without discoverable cause, and pains in the spine.

38. **Constipation in Men on Active Service.**—The lack of fresh vegetables in the soldiers' rations at the front entails constipation. It may be simple or spastic, or of the atonic or toxic type, or with inflammation. The gravity of the latter groups shows that constipation should never be neglected, to ward off these more serious developments. In prophylaxis, efforts should be made to supply the soldiers with vegetables and fruits, fresh or dried. Labbé advises in the toxic form disinfection of the bowels by means of cultures of lactic and paralactic bacilli, calomel, benzonaphthol and

naphthol, used alternately. Liver extracts and bile extracts are useful to stimulate the liver and bowel functioning.

39. **Bimanual Percussion.**—Peyret gives illustrations of this means of determining the dulness characteristic of pulmonary tuberculosis. The two hands are not applied opposite each other but on radii from the common center being percussed. The palms are applied flat, one over the anterior margin of the clavicle at the middle of a line joining the bifurcation of the sternum with the outer point of the acromion above the head of the humerus. The other hand is placed on the spine of the scapula. A line is drawn to connect these points, passing over the shoulder and extending a few inches beyond them. This he calls the *ligne directrice* as the percussion is applied along this line. He devotes nearly nine columns to describing the exact technic and the information to be derived from the percussion.

Revue Médicale de la Suisse Romande, Geneva

July, 1918, **38**, No. 7

41 *Pneumococcemia in Children. D'Espine and Reh.—p. 413; Turrettini.—p. 436.
42 *Mechanism of Conjugated Deviation of Eyes and Rotation of Head in Hemiplegia. L. Bard.—p. 423.
43 Carbonated Baths for Intermittent Claudication. E. de La Harpe.—p. 429.
44 *Imperforate Anus. Veyrassat.—p. 433.

41. **Pneumococcemia in Children.**—D'Espine and Reh state that the mortality was 3.7 per cent. in 374 cases of pneumonia in children in the seven years ending with 1917. Then came a series of 32 cases with 9 per cent. mortality. In one family there were 2 cases with early fatal empyema, although there did not seem to be mixed infection. In 9 cases there was pneumococcus meningitis with only one recovery. Netter has reported 17 cases of meningococcus meningitis with tardy pneumococcus invasion, all terminating fatally notwithstanding serotherapy. But D'Espine here relates a case of similar mixed infection with recovery under antimeningococcus serum treatment. One of the children had a pneumococcus sore throat and the pneumococci were found in the blood, but prompt recovery followed. A case is also described of febrile pneumococcemia in a girl of 3 without any manifest localization of the infection. The pneumococci were cultivated from the blood repeatedly during nearly a month, the fever keeping up with a typhoidal condition for three weeks; under six intravenous injections of a silver preparation the temperature finally dropped to normal.

Turrettini reports the case of an infant less than 5 months old who developed pneumonia, and the pneumococcus was found in the blood on repeated examinations during the following six months, with final complete recovery. The child increased in weight during the 180 days of its septicemia and occasional febrile temperature. The autovaccine from the persisting septicemia evidently attenuated the virulence of the pneumococci to such an extent that the growth of the child was scarcely interfered with.

42. **Rotation of Head and Eyes with Hemiplegia.**—Bard explains how the loss of the gyratory reflexes on the paralyzed side induces an automatic predominance of the gyrations in a determined direction, a sensorial hemi-agyria, as he calls it.

44. **Imperforate Anus.**—The rectum opened in the vagina but this was not discovered by any one, it is said, till the babe was 6 months old and wasting away from abdominal disturbances and general debility. The transplantation of the anus to the perineum was peculiarly difficult in such a young and restless child, but the operation was a perfect success. The child is now 5 years old and free from both retention and incontinence. After the operation the mother was instructed to dilate the anus occasionally with her finger.

Annali d'Igiene, Rome

May 31, 1918, **28**, No. 5

45 *Passage of Rabies Virus to Fetus. Lanfranchi and Lenzi.—p. 233.

June 30, 1918, **28**, No. 6

46 Mixed Infection in Glanders. M. Carpano.—p. 273.
47 *Monophagism, Pellagra and Scurvy. G. Volpino.—p. 280. Cont'n.
48 *Immunity of Fowls and Pigeons to Anthrax. C. Sarti.—p. 291. Commenced in No. 5, p. 226.
49 The Prevailing Three-Day Fever Epidemic. G. Sampietro.—p. 300.

45. **Passage of Rabies Through Placenta to Fetus.**—Lanfranchi and Lenzi report the case of a gravid bitch that had succumbed to rabies at term. Rabbits inoculated with medulla tissue from the mother and from the fetuses all died with symptoms of rabies.

47. **One-Sided Diet, Pellagra and Scurvy.**—Volpino has been studying deficiency diseases for years, and here describes his extensive experimental research and compares the results with those that have been reported by others. Among the experiences reported was the finding that pellagrins respond with a pronounced local and general reaction to injection of extracts of spoiled and sound maize. Similar series reported by others bring the total to 136 positive and eleven dubious or negative responses in 147 pellagrins, while positive responses were obtained only in thirty-three of 130 nonpellagrins. He regards these findings as testifying to sensitization of the pellagrins. The article is to be continued.

48. **Immunity of Fowls to Anthrax.**—Sarti inoculated hens and pigeons with the anthrax virus subcutaneously, by the vein or in the anterior chamber. The fowls proved to be immune even to large doses of the virus, but a few of the pigeons developed anthrax septicemia. Study of the blood and other factors involved shows that several factors evidently cooperate in this natural immunity. The ferments in the blood serum sensitize the micro-organisms so that they fall easy prey to the phagocytes. Fasting reduces the defensive forces and may practically suspend the immunity.

Pediatria, Naples

July, 1918, **26**, No. 7

50 *Roentgen Examination of Child's Chest. F. P. Sgobbo.—p. 385.
51 *Vaccine Prophylaxis of Scarlet Fever. G. Caronia.—p. 406.
52 *Diphtheria Bacilli Carriers. S. Cannata.—p. 414.

50. **Roentgen Examination of Chest in Children of Different Ages.**—Sgobbo examined eighteen boys and twelve girls from families of working men; only 20 per cent., including the supposedly healthy, gave normal findings in the lymphatic glands of the mediastinum and lung. In those with pathologic antecedents of any kind, the findings were always positive. It is possible that some of the glandular lesions may have been the result of other than tuberculous processes.

51. **Vaccine Prophylaxis of Scarlet Fever.**—Caronia and Di Cristina's previous work in this line has been duly chronicled in these columns. Di Cristina makes the vaccine from an extract of the scales, an antigen having been found in them which seems to be able to confer permanent immunity. He makes the vaccine by dissolving out the antibodies, soaking the scales in serum from convalescents. Subcutaneous injection of this vaccine induces the production of a specific amboceptor for the alcoholic extract of the desquamated scales. This confirmed that the reaction observed is not a simple reaction of the lipoids contained in the scales, but is also due to the presence of antigens in the true sense of the word. Children from 2 to 9 years old, treated with the vaccine until the immunity reaction appeared, in close contact with scarlet fever patients or with peeling convalescents, never developed scarlet fever. These experiences substantiate that the branny scales are the last stronghold of the causal germs in the organism. They further demonstrate the feasibility of the biologic differential test by this means, and also of effectual prophylaxis and possibly of treatment.

The Clinica Pediatrica at Naples consists merely of two large contiguous halls, each containing ten beds. One of these wards is given up to infants, the other to the larger children. There are no provisions for isolation, and not even for observation, so that when a recent arrival proved to have scarlet fever, its epidemic spread seemed inevitable. One of the children in the ward soon presented symptoms of the disease, and all the other children in the ward were injected with the scale vaccine. He also injected the vaccine in some children in private families when one had developed scarlet fever. None of the twenty-three children thus treated developed the disease, and only two, both feeble infants under 2 years old, presented a few symptoms indicating an abortive type of infection. Possibly these infants had been injected after infection was already under way. The immunization of the vaccinated children was rendered apparent by the deviation of complement test. He injected 1 c.c. of the vaccine on three alternate or consecutive days. The two primary cases of scarlet fever remained in the ward throughout their disease and desquamation, but no other cases developed.

52. **Diphtheria Bacilli Carriers.**—Cannata compares a number of recent publications on this subject. He had to stamp out an incipient epidemic of diphtheria in a battalion in active service. As bacteriologic examination of the 1,200 men was out of the question under the circumstances, he swabbed the pharyngeal mucosa of all the men with iodized glycerin, and no further cases developed. Smears from the throat of 250 later showed the bacilli in only one case. Schiøtz noticed that children with a staphylococcus sore throat placed by mistake in the diphtheria ward never contracted diphtheria. He accepted this as a suggestion to apply cultures of the staphylococcus in local treatment of the pharynx, and has reported excellent results. Ten other writers have published favorable results confirming the efficacy of this antagonistic bacterial treatment. They spray the nose and nasopharynx with eighteen or twenty-four hour bouillon cultures of the *Staphylococcus aureus*, and only a few have reported disappointing results. Lactic acid bacilli; pyocyanase; a diphtheria vaccine, and desiccated horse serum previously treated with cultures of diphtheria bacilli have also been used. With the latter method no further bacilli were found after twenty-four hours in the thirty-five cases tested.

Archivos Españoles de Enf. del Ap. Digestivo, Madrid

July, 1918, **1**, No. 7

53 Innervation of Digestive Apparatus. J. Vilato.—p. 289.
54 Necropsy with Hematemesis in Syphilitic. Gallart.—p. 309.

Brazil-Medico, Rio de Janeiro

July 6, 1918, **32**, No. 27

55 Flagellate Parasites. (Opalina Brac. n. sp.) Pinto—p. 209.
56 Internal Secretions and Pediatrics. A. Hymanson (New York). —p. 209. Concluded in No. 28, p. 217.

Prensa Medica Argentina, Buenos Aires

July 10, 1918, **5**, No. 4

57 *Joint Manifestations of Tardy Inherited Syphilis. M. R. Castex and R. Denis.—p. 37. Commenced in No. 1, p. 1.
58 *Rectal Medication in Syphilis. C. A. Castaño.—p. 42.
59 Tetanus and Industrial Accident Insurance. L. Bard.—p. 42.

57. **Joint Manifestations of Tardy Inherited Syphilis.**—Castex and Denis report in detail a large number of cases which demonstrate that tardy inherited syphilis is able to induce a clinical picture deceptively resembling that of acute polyarticular rheumatism. If the causal syphilis is overlooked, these cases may degenerate into chronic and absolutely incurable conditions, simulating ordinary chronic rheumatism. In differentiating the syphilitic origin, other members of the family should be examined for stigmata of syphilis, and the personal, familial and inherited antecedents investigated with minute care. In any event, they advise vigorous treatment as for syphilis, as it can never do harm while it is the only means to ward off irreparable lesions. The most common forms of the tardy joint manifestations of inherited syphilis simulate white swelling and hydrarthrosis, usually affecting the knee or hip joint. They may subside completely under specific treatment in the early stages. The mode of onset and the progress are important points in differentiation, as also the exclusion of tuberculosis and rheumatism. The long serial article is profusely illustrated.

58. **Rectal Treatment of Syphilis.**—Castaño states that when circumstances render injections impracticable, he has obtained excellent results by administering mercurial treatment by way of the rectum. In his several years of experience with this technic he has never had any inconveniences from it. Farini of Buenos Aires has even administered both mercury and arsphenamin by this route, with surprisingly good results. In some of Castaño's cases the patients developed stomatitis in a few days, confirming the absorption of the mercury. He administers it in a coco butter suppository, one on retiring, suspending the treatment for three or four weeks after the suppositories have been administered for twenty days, then resuming the treatment again. When the patient has bad veins, he prefers to administer neo-arsphenamin by the rectum, instilling it slowly and keeping the patient reclining for a time. He uses the same doses with this as for intravenous injection.

Revista Argentina de Obst. y Ginecologia, Buenos Aires

March-April, 1918, **2**, No. 2

60 *Acute Dilatation of the Stomach. J. Iribarne.—p. 121.
61 *Inaccessible Vesico-Vaginal Fistulas. J. C. Ahumada.—p. 137.
62 Extraperitoneal Cesarean Section. T. A. Chamborro.—p. 149.
63 *Cervical Embryotomy. J. A. Beruti.—p. 159.
64 Anteversion and Retroversion of Pelvis. E. A. Boero.—p. 172.
65 Technic for Classic Cesarean Section. N. Fernandez.—p. 175.

60. **Acute Postpartum Dilatation of the Stomach.**—Iribarne is convinced that this is of more frequent occurrence than generally supposed, but often escapes recognition. P. Ramos could find only seventeen cases on record during the nine years that had elapsed since Audibert reported the first case in 1907, but during the two years since, six cases have been encountered in Argentina alone. Iribarne reports an exceptionally severe case in a secundipara. The delivery of a normal child had been spontaneous and expeditious, and the general condition was good, but about twenty minutes after expulsion of the after-birth there was slight hemorrhage. The midwife injected ergot and camphorated oil, and massaged the uterus, but the slight hemorrhage still persisted. By the end of the hour the pulse was fast and small, and the woman complained of feeling suffocated, and there was much pain. The pallor was extreme, but the uterus had contracted well and the hemorrhage had practically ceased. Iribarne injected saline subcutaneously and by the vein, and injected a pituitary extract. The general condition was growing rapidly worse, the pain and sense of oppression intense, the pulse 150 and almost imperceptible, although the conditions in the genital sphere were physiologic. The woman's expression of distress increased, the pulse became 160 and 170, and then became totally imperceptible. There was no vomiting or thirst, but the bulging of the stomach confirmed the suspicion of acute dilatation of the stomach, and on turning the woman into the prone position, with the mouth open, there was a rush of gases from the stomach and rectum, followed by vomiting and great relief. But the pulse was still imperceptible, and the woman was chilly. Pituitary extract was injected anew, hoping to act on the musculature of the stomach and on the heart. The woman felt relieved, but was unable to lie prone and was turned on her back; oxygen was administered, with saline, epinephrin, caffein and strychnin, while hot water bottles were packed around her and she was rubbed with alcohol. Then the oppression and suffocation returned, as severe as before, but were relieved again by making the woman lie prone. An attempt at lavage of the stomach was then made, but the woman stopped breathing as the tube was introduced into the esophagus, and her eyes rolled up. The tube was withdrawn and ether was injected, and the skin rubbed vigorously, and she revived but the condition was still very grave. Pituitary extract was given and the woman turned on her stomach, which was followed by belching of gases and vomiting. From 10 p. m. to 2 a. m. they were thus working over her, the pulse absolutely imperceptible throughout. Then the pulse began to be felt and by 2:30 the condition was no longer alarming, and recovery proceeded although there was a tendency to gastric intolerance and lassitude for some weeks.

Iribarne explains the mechanism of the arteriomesenteric occlusion which accompanies the dilatation of the stomach, and the cessation of the occlusion in the prone position. The woman should be turned to this position on the slightest suspicion of acute dilatation of the stomach. It does no harm in any event, whatever is the matter, while it is a life-saving measure with true arteriomesenteric occlusion of this kind.

61. **Treatment of Inaccessible Vesicovaginal Fistulas.**—The transvesical operation is the most logical because it goes direct to the fistula; it is the easiest technic, and the most effectual. Three cases are described which illustrate the advantages of this method.

63. **Embryotomy.**—Beruti's modified instrument consists of a curving spiral spring that is pushed through a stiff

cannula. The spiral spring curves of itself around the fetal neck, and the end can be drawn down and attached to a Gigli wire saw. The saw is drawn up by pulling the flexible wire spiral spring back into the cannula.

Revista de la Asociacion Medica Argentina, Buenos Aires

April, 1918, **28**, No. 161

66 *Pancreatic Infantilism. R. A. Bullrich.—p. 303.
67 *Cyst in the Prostate. E. Castaño.—p. 317.
68 Syphilis in Medical Diagnosis. R. P. Escalier.—p. 325.
69 Roentgen Therapy of Fibromas. J. Guardado.—p. 337.
70 Torticollis Tic. T. Martini and J. J. Berterini.—p. 349.
71 Mercurial Treatment of Children. J. C. Navarro.—p. 360.

66. **Pancreatic Infantilism.**—Bullrich reports a typical case of Byrom Bramwell's pancreatic infantilism, with the necropsy findings. The case was distinguished further by the patient's being a diabetic. Necropsy revealed that the trouble was not in the pancreas so much as in the thyroid and pituitary body. There were lesions in the pancreas but they were insignificant compared to those in the thyroid and pituitary body. The case was one therefore of pluriglandular derangement. He had been normal and well grown till about the age of 11 when he began to grow thin and at 16 had pronounced diabetes mellitus. Then came eight months of rebellious diarrhea. At the age of 20 he was intelligent but was only about 4 feet tall and weighed only 21 kg. The skin was very dry and wrinkled like that of an old man, and the urine contained from 38 to 45 per thousand sugar. The stools showed signs of pancreas deficiency. Death occurred suddenly in an epileptiform convulsion, with nothing to suggest diabetic acidosis.

67. **Prostatic Cysts.**—In the two cases which Castaño has encountered, the cyst was in carcinomatous degeneration. The one patient whose case is described with illustrations has been in good health during the nine months or more since the prostatectomy. Prophylactic radium therapy was applied systematically during the first six months.

Revista de Medicina y Cirugia, Havana

June 25, 1918, **23**, No. 12

72 *The Mammary Fluid in the Newly Born. J. F. Arteaga.—p. 323.

72. **The Mammary Fluid in the Newly Born.**—Arteaga investigated on fifty-two infants the fluid that could be expressed from the mammary glands, just after birth up to twelve days or nineteen days. The findings in 97 per cent. indicated that the fluid was of the nature of a secretion, a physiologic phenomenon, independent of sex, breast feeding, and the obstetric and pathologic antecedents of the mother. In some the secretion kept up for from twelve to sixty-two days, with an average of forty-three days. In another child it kept up for 128 days.

Revista de Medicina y Cirugia Practicas, Madrid

June 22, 1918, **121**, No. 1512

73 Experimental Research on the Secretory Innervation of the Thyroid. L. Asher and M. Bañuelos.—p. 353.

Revista Medica Cubana, Havana

June, 1918, **29**, No. 6

74 *Microbian Associations. J. A. Figueras.—p. 291.
75 Gastro-Intestinal Resections. Chavez and Yaniz.—p. 296.
76 Solid Tumors of Spermatic Cord. G. Pujadas.—p. 299.

74. **Mixed Infections.**—Figueras reports a case of diphtheria in which streptococci were found in the smears, as well as diphtheria bacilli. The child was treated with both diphtheria antitoxin and an antistreptococcus serum, and also with serum from the renal vein of a goat as the condition was grave and the anuria persisted. Improvement was evident in a few hours, and under renewed injection of the goat serum and antistreptococcus serum the child recovered, the symptoms on the part of kidneys and myocardium gradually subsiding. There were no signs of serum sickness although 17,000 units of the antistreptococcus serum had been given besides the goat serum and the antitoxin. This child's brother had pure diphtheria at the same time, and was left a carrier until the tonsils were removed.

Revista Medica del Rosario, Argentina

July, 1918, **8**, No. 3

77 *Bacteriology of Blood in Puerperal Fever. E. Mazzini.—p. 171.
78 *Syphilitic Diabetes Insipidus. T. Fracassi.—p. 197.
79 *Visit to Lyons Maternity. J. B. Abalos.—p. 208.
80 *Brain Tumor in Girl of Twelve. C. Muniagurria.—p. 221.

77. **Bacteriologic Examination of the Blood in Puerperal Fever.**—Mazzini charts the bacteriologic findings in sixteen cases of puerperal fever, and emphasizes that clinical examination alone is not enough for the diagnosis and prognosis in this disease. Bacteriologic examination is indispensable not only for the blood but also for the lochia. The discovery of virulent bacteria and their increasing numbers on repeated examinations point to a fatal outcome. On the other hand, the diagnosis and prognosis cannot be based exclusively on negative bacteriologic findings. In his series, staphylococci or streptococci were found in the blood in 30 per cent. and half of these cases terminated fatally. In one of two cases with streptococci in the blood, the general condition was very grave but the numbers of streptococci grew constantly less and the woman recovered. The other seemed to have a mild case but the increasing numbers of streptococci in the blood warned of the impending fatal termination. The bacteriologic findings were positive in six of fifteen cases; typhoid bacilli were found in one fatal case, and, associated with staphylococci, in one woman who recovered. Jaundice was present in two cases with hemolytic streptococci but one of the two women recovered. He cites literature on the subject, mentioning Veit's experience that the prognosis was less unfavorable when gonococci were found with the streptococci or with colon bacilli.

78. **Syphilitic Diabetes Insipidus.**—Fracassi reviews the theories of defective or excessive pituitary functioning as the cause of diabetes insipidus, and the theories based on hormones and trophic centers. They all seem to accept a single origin for all forms of diabetes insipidus, namely, some organic or functional disturbance in the pituitary body or polyuric brain centers. In a case described, the young man within three months developed polyuria up to 15 liters in the twenty-four hours. He had had three attacks of gonorrhea during the last seven years and an indurated chancre during the sixth year, but there had been no secondary manifestations. In the last month there had been lightning pains in the legs and quite recently a little fever. All the symptoms subsided under mercurial treatment, the amount of urine dropping from 10,000 to 6,500 c.c. in the course of eight daily intravenous mercurial injections. By the twentieth injection the total output of urine was only 2,000 c.c. Muniagurria has published a similar case of cure of diabetes insipidus under specific treatment.

79. **Obstetric Technical Points.**—Abalos gives an illustrated description of his visit to the Clinique Obstétricale in charge of Fabre at Lyons. One pavillion is devoted to "girl-mothers" and abortion cases. The morbidity has shown great improvement since the pregnant are given only douche baths, after the first all-over cleansing bath. Fabre believes in "mathematical obstetrics." He has found that the uterus grows each month 4 cm. By the end of the fourth month it should reach 14 cm. above the pubis, and with approaching term it should reach to about 32 cm. By weekly measurements, this normal upward progress can be traced. If it does not occur, the death of the fetus is probable. If the uterus reaches higher than 32 cm., hydramnios or twin gestation or contracted pelvis should be suspected. Fabre determines the measurements of the pelvis with a roentgen tube 50 cm. above or 20 cm. below the level of the pubis, the woman lying prone on a barred frame on which the shadow of the bones is outlined, each square representing 1 cm., the squares drawn as by Mercator's projection. Three illustrations show the system and the precision of the measurements thus obtained. Another illustration shows Fabre's dynamometer used in connection with the forceps to gage the force applied. A description is also given of a pneumatic device, strapped around the waist, to record the contractions of the uterus.

Fabre insists on isolation for every parturient harboring the streptococcus. He regards the turpentine fixation abscess as the sovereign remedy for puerperal fever. It acts, he thinks, by inducing the production of antibodies from the irritation of the tissues, and it has besides a direct and elective action on the streptococcus. He uses turpentine also in prophylactic injections into the uterus in a 5 per thousand solution; after delivery, in a 10 per cent thousand solution. For cauterizing, he uses a 10 or 20 per cent. suspension in oil. For the fixation abscess, from 1 to 5 c.c. of pure turpentine. For artificial serum, he dissolves 1 gm. of turpentine in 1 gm. of alcohol and pours it into 200 gm. of artificial serum. The mortality has been reduced by 10 per cent. since this turpentine treatment has been systematically used. The total mortality in the ten years ending with 1913 has been 0.47 per cent. in 11,582 obstetric cases, and puerperal infection was responsible for less than half of this. The total morbidity dropped from 21.7 to 11.1 per cent. between 1906 and 1913.

80. **Brain Tumor.**—Three months of intense headache and vomiting with slight paresis of the arm in a girl of 12 were explained by an echinococcus cyst in the parietal lobe, invading the lateral ventricle. There was no eosinophilia.

Revista Sud-Americana de Endocrinologia, etc., Buenos Aires

June, 1918, **1**, No. 6

81 Fatal Gonococcus Endocarditis. C. Spada, Jr.—p. 145.

Semana Medica, Buenos Aires

May 16, 1918, **25**, No. 20

82 *Systematized Prophylaxis of Tuberculosis. N. Lozano and C. Mainini.—p. 551.
83 The Endocrine Function of the Ovary and the Mammary Secretion. F. A. C. Bazan.—p. 570.
84 *Test Precipitation of Alkaloids. J. A. Sanchez.—p. 571.
85 Infectious Diseases at Buenos Aires in Last Fifty Years. E. R. Coni.—p. 574.
86 *Treatment of Varicocele. O. Ivanissevich and H. Gregorini.—p. 575.

82. **Systematized Prophylaxis of Tuberculosis.**—This extensive article gives numerous statistical tables of the death rate from tuberculosis in the different districts throughout Argentina, classified by trades and professions and compared with other countries. On this basis are outlined the measures that are proposed in prophylaxis.

84. **Precipitation Test for Nicotin and Other Alkaloids.**—Sanchez' reagent is a sulphomolybdate. It is exceptionally sensitive and has a number of advantages, he says, over other reagents for testing organic bases, especially in dosage of nicotin in tobacco and in extracts. The technic is simple and is described in detail.

86. **Treatment of Varicocele.**—The anatomic and clinical cure is realized by exposing the left anterior spermatic vessels and severing all the spermatic veins in this bunch between ligatures. The return circulation is thus diverted to the posterior vessels and epigastric vein, a tributary of the external iliac. The method has been applied only in three clinical cases to date.

Siglo Medico, Madrid

July 20, 1918, **65**, No. 3371

87 Physicians and the State. J. F. Rodriguez.—p. 563.
88 *Epigastric Hernia plus Duodenal Ulcer. L. Urrutia.—p. 565.

88. **Epigastric Hernia Plus Double Duodenal Ulcer.**—Urrutia adds another to the list of cases on record in which an epigastric hernia was accompanied by ulceration in the digestive tract below. There were two ulcers in the duodenum, and each had bored through the wall. The perforation of each at a ten months' interval had induced a severe set of symptoms, but they had subsided spontaneously each time, the opening having evidently become obstructed after the acute phase was past. Conditions were corrected by resecting the segment of bowel involved and a gastro-enterostomy.

Vida Nueva, Havana

July, 1918, **10**, No. 7

89 Necessity for Introducing Systematic Prophylactic Treatment of Venereal Disease. J. E. Lopez-Silvero.—p. 201.
90 Diet in Nephritis. M. A. Serra.—p. 206.

Mededeelingen van den Burg. Geneesk. Dienst, Batavia

1918, No. 1

91 *Racial Cholesterol Metabolism. C. D. de Langen.—p. 1.
92 Retention of Nitrogen and Constant of Ambard in Inhabitants of Tropics. C. D. de Langen.—p. 36.

91. **Cholesterol Metabolism in the Tropics.**—De Langen discusses the pathology of races, particularly in regard to cholesterol metabolism. He investigated the latter in natives of Java, having been impressed by the rarity of gallstone cases at the polyclinic and surgical clinic in his charge. He found only one case on the records among the 15,000 patients at the hospital and this was not a native of the East Indies, while not a single instance was encountered among the 40,000 outpatients. The hospital at Sourabaja reports only seven cases among 67,500 inmates and outpatients. The figures from Semarang are eight cases in 47,000. In 1914, throughout the whole of Java, three cases of gallstones were recorded among the 58,021 hospital and outpatients. The cholesterol content of the blood of the natives is exceptionally low. This fact suggests a causal connection and disproves the theory that infection or stagnation is the prime factor in cholelithiasis. This assumption is the more plausible as the natives of the East Indies are subject to infections of the liver and biliary passages, and pregnancies there do not differ from pregnancies in other countries where gallstones are common. The few gallstones found in Java are usually of the rare pigmented type, such as is found with hemolytic jaundice. Pruritus seems also to be exceptionally rare among the natives, which in turn may be explained by the low cholesterol content of the blood. Diabetes and chronic nephritis, with which hypercholesterolemia is often associated, are likewise rare in Java. In conclusion de Langen tentatively recalls that beriberi is a disease locating in the nervous system—which is the most lipoid-rich tissue in the body—and hence study of beriberi may yet reveal that the vague notion of vitamins will merge into the problem of lipoid metabolism. Certain data he has accumulated sustain this hypothesis, and it is attractive further from a therapeutic point of view. *Chercher la physiologie c'est éclairer la pathologie.* The article is in parallel columns of Dutch and English.

Nederlandsch Tijdschrift voor Geneeskunde, Amsterdam

June 15, 1918, **1**, No. 24

93 The Separable Minimum in Testing Vision. C. O. Roelofs.—p. 1616.
94 Tuberculosis in Netherlands Asylums. F. J. Stuurman.—p. 1631.

June 22, 1918, **1**, No. 25

95 Farewell Address. C. A. Pekelharing.—p. 1680.
96 Origin of Porphyrins in the Intestinal Canal. I. Snapper.—p. 1692.
97 *Acute Pseudoleukemia. I. Van Esso.—p. 1698.

97. **Acute Pseudoleukemia.**—A previously healthy man of 31 developed fever. He died in four months during which there had been six recurring attacks of fever, not influenced by quinin or arsenic. The highest point of the fever was generally in the afternoon. The acute onset suggested an infectious disease, but the fever curve indicated a blood disease. By the second month, with 3 or 4 million reds there were only 1,530 whites; no nucleated cells; no polychromatophilia; 39 per cent. lymphocytes, and 51 per cent. neutrophils.

Hospitalstidende, Copenhagen

June 26, 1918, **61**, No. 26

98 *Diaphragmatic Hernia. V. Schaldemose.—p. 849.

July 3, 1918, **61**, No. 27

99 *Operation for Diaphragmatic Hernia. A. Helsted.—p. 881; Roentgen Findings. H. J. Panner.—p. 890.

98. **Suture for Diaphragmatic Hernia.** — Schaldemose remarks that a large proportion of diaphragmatic hernias cause no appreciable symptoms of any kind. When symptoms do develop they may be of the most diverse nature, depending on the organs which are most affected by pressure or by strangulation. Operative measures are the only treatment, and by way of the thorax seems the preferable route. It is difficult if not impossible to reduce the hernia from below and suture the opening.

99. **Diaphragmatic Hernia.**—Helsted's patient was a robust young man; a fall in getting out of a vehicle and a contusion of the neck not long after may have contributed to the hernia. The symptoms were those of periodically recurring partial incarceration of the stomach, with displacement of the heart and compression of the lung. The pains radiating to the left shoulder and down the outer side of the arm, plus the roentgen findings, differentiated the hernia. The roentgenograms all show the high curving convex line reaching, like a rainbow, from the median shadow to the left thorax wall. This line represents the air bubble of the stomach. Roentgenoscopy showed that this line moved up and down, synchronous with the movements of the right diaphragm, both in time and direction, although more sluggishly. He operated through the thorax with complete success. The suturing of the diaphragm was difficult on account of its constant movements. In another case of the kind he would try blocking the phrenic nerve on that side; this has been found effectual in keeping that half of the diaphragm quiet for several hours at a time. In the cases on record, catgut was used to suture the diaphragm, but he did not dare to trust to it and used fine silk, doubled. Five months later nothing abnormal can be discovered objectively, but the young man complains of palpitations and pain in the left chest, and inability to sleep lying down.

99. **Roentgen Findings with Diaphragmatic Hernia.**—Panner examined with the roentgen rays the two cases reported in the preceding two abstracts, and also a third case elsewhere. When several viscera are involved in the hernia, there may be several rainbow-like lines cast by the rounding tops of the air bubble in the different organs. The incurvation of the sides of the stomach—where it is grasped by the diaphragm—is also instructive. In the discussion that followed these three reports, read at a meeting of the Danish Surgical Association, Bartels described the conditions found in some cases in which necropsy had revealed an unsuspected diaphragmatic hernia. In one of the cases the sudden symptoms had suggested perforation of a gastric ulcer, but the roentgenoscopy findings seemed to indicate left pneumothorax. The lung cast scarcely any shadow on the left side, and a horizontal shadow seemed to indicate an effusion. The heart was displaced upward. The roentgen picture was typical for pneumothorax, except for the upward convex line arching across, but this was so indistinct in the roentgenogram that it was overlooked. The young man had been in the hospital for ten days when he complained of sudden intense pain in the chest, and died within a few minutes. Necropsy showed a hole in the diaphragm large enough to admit the fist; the viscera had slid through this opening: the stomach down to the pyloric region, the spleen and the greater omentum. There was no history of trauma in the case.

Hygiea, Stockholm

May 15, 1918, **80**, No. 9

100 *Tuberculosis Mortality at Stockholm. E. Lindhagen.—p. 497.
101 *The Exudative Diathesis. A. Lichtenstein.—p. 544.

June 16, 1918, **80**, No. 11

102 The New Era in the Study of Syphilis. G. Ahman.—p. 671.

100. **Tuberculosis Mortality at Stockholm.**—Lindhagen's analysis of the tuberculosis mortality at Stockholm during the last few decades shows that it is considerably higher than that of Christiania and Copenhagen. The decline in the mortality since 1881 has been only 39.3 per cent. while in Christiania it has been 43.7 per cent. and in Copenhagen 56.4. His tables show a remarkable decline in the general mortality at all ages under 60, the difference amounting to 66 per cent. for children under 1 year old and 77 and 70 per cent. for children of 1 to 5 and 5 to 10. The tuberculosis mortality in women was only two-thirds that of men. The mortality between the ages of 15 and 40, both sexes, has declined very little in the last twenty years or has even increased a little. Between the ages of 15 and 20 the tuberculosis death rate in women has increased by 18 per cent. while that of men has been reduced by 12 per cent.

101. **The Exudative Diathesis.**—Lichtenstein presents an able exposition of what is meant by the exudative diathesis and the measures required to combat it, with analysis of about seventy-three different European publications on the subject. He emphasizes that treatment must seek to prevent and cure the various symptoms, as the diathesis itself cannot be transformed by our efforts. Surgical and medical measures are called for with the exudative diathesis, as well as dietetic measures. Atropin has never proved satisfactory in his hands in treatment of the eczema, but it has been strikingly effectual in treatment of the tendency to asthma in some cases, while others did not seem to derive any benefit from it. Children with the exudative diathesis should be guarded against infections of all kinds with special care. The conception of the exudative diathesis represents progress in the insight it has afforded as to the influence of diet on the course of a diathesis. But we have taken only the first steps in the field thus opened up. All the means for research in biology, chemistry and pathology should be called to aid in seeking the pathogenesis of the diatheses, the therapeutics, the diagnosis of latent diatheses, and the nucleus for the diatheses in questions of heredity.

Ugeskrift for Læger, Copenhagen

July 4, 1918, **80**, No. 27

103 *Diabetes. V. Scheel.—p. 1039.
104 *Test for Albumin. Lilliendahl-Petersen.—p. 1054.
105 *Vaginal Sarcomas. E. Himmelstrup.—p. 1056.

103. **Pathology of Diabetes.**—Scheel remarks that as a general thing theories in regard to diabetes follow on practice, instead of practice being based on theoretical reasoning. The connection between high sugar content of the blood and diabetes is still a question; he reports a case in which diabetes developed in a man of 59, apparently from a trauma. The sugar content of the blood was 0.30 per cent. (0.08 to 0.10 is the normal range), but the urine showed less than 0.5 per cent. sugar and none at all when the blood sugar had been reduced to 0.17 per cent. on antidiabetic diet, not even when the carbohydrates were given freely up to 80 gm. a day. There were no evidences of acetonuria at any time. At first there was some disturbance in vision, but this subsided with the hyperglycemia. There was no albuminuria and the blood pressure was only slightly above normal. Experience has shown that the blood sugar and urine sugar may behave in diabetes with chronic interstitial nephritis just the same as in others free from nephritis. The permeability of the kidneys for sugar does not seem to be modified by kidney disease. The latest research, on the other hand, has confirmed the importance of disease of the pancreas as a factor in diabetes, and that hormones from the chromaffine system are likewise involved.

In discussing the formation of sugar from fat, he relates the case of a diabetic man of 35 who was in the hospital for a year and a half, and the metabolic findings were recorded each day. In one thirty-day period the intake of carbohydrates was 3,525 gm. and the output 5,925 gm.; the intake of albumin 262 gm.; the output of nitrogenous substances, 297 gm. No assumption to explain this seems plausible except that the excess of sugar was formed from fat.

104. **Quantitative Determination of Albumin.**—Petersen remarks that the reagents for the usual tests for albumin are difficult to obtain at present. He proposes what he asserts is an excellent substitute for Claudius' reagent, while it is inexpensive and available. Comparative tests with the Esbach and Claudius methods have demonstrated its reliability. The formula for the reagent is phosphomolybdic acid, 2 gm.; concentrated sulphuric acid, 6 gm.; kaolin, 6 gm., and distilled water to 400 gm. It is used like the Esbach reagent, but takes only six hours. He prefers for the test an ordinary centrifuge glass, graduated as for the Claudius test.

105. **Vaginal Sarcoma in Little Girl.**—Himmelstrup has found records of thirty-three cases of primary vaginal racemose sarcoma, like the case he describes in a girl of 4. The majority were in children under 3. Operative measures gave only brief respite, all the patients dying in a year or two after the first symptoms.

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INFANTILISM AND OTHER HYPOPLASTIC CONDITIONS OF THE UTERUS*

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BALTIMORE

Infantilism of the female genital organs may be only a local manifestation of general infantilism (infantilismus universalis). More frequently, however, it is observed in women who, aside from the genital organs, present no recognizable defects in development, and who, for that matter, may be unusually well developed. It is this local form of infantilism (infantilismus partialis or genitalis) with which we are concerned in this paper. Its very great frequency can be attested by every gynecologist, although I know of no figures bearing on this point. The clinical importance of the condition rests chiefly on two considerations: (1) the frequency with which it is associated with aberrations of the menstrual function, and (2) the fact that it often seems to constitute the anatomic basis for sterility.

Strictly speaking, the term "infantile uterus" should indicate that the organ resembles that normally found in the infant. The development of the uterus may, however, be arrested even as early as in the fetal stage, while on the other hand, the inhibition of development may not come until the prepuberal epoch. No practical advantage is to be derived from making very fine distinctions along this line, since the difference between the uterus of the fetus, the infant, and the child up to the prepuberal age is not nearly so great as one might be inclined to expect. Very frequently, the differentiation between the various types is not possible clinically. For this reason, it is perhaps not worth while to criticize the common custom of designating as an "infantile uterus" any uterus that presents noteworthy defects of development.

The observations herein noted are based on the study of twenty-six uteri that were removed at necropsy from subjects varying in age from the twelfth week of fetal life to the fourteenth year of postnatal life. For supplying me with a portion of this material, I am indebted to the members of the Pathological Staff of the Johns Hopkins Hospital. The uteri in the series were derived from nine fetuses, and seventeen infants and children of various ages. Among the fetuses, the age of one was placed at 12 weeks, of three at 5 months, of two at 6 months, and of three at between 8 and 9 months. Of the babies and children, two were stillborn at term; one was 5 days old; one, 10 days; one, 2½ months; two, 4 months; one, 6 months; one, 8 months; one, 9 months; one, 13 months; one, 15 months; one, 2 years; one, 2½ years; one, 4 years; one, 9 years, and one, 14 years. In studying this material, special attention has been given to the position of the uterus, its relation to the other pelvic organs, its size, its form, the relation existing between its different portions, and the presence or absence of flexions. For microscopic study, sagittal sections of the uterocervical canal have been found most satisfactory. The tubes and ovaries have been studied in most of these cases, but with the results of this study we are not concerned in this paper.

THE UTERUS IN FETAL LIFE

The characteristics of the uterus during the early stages of fetal life are well shown in Figure 1, which represents a sagittal section of the pelvis of an embryo of 76 mm. in length. This corresponds to an age of about 12 weeks. This specimen I was enabled to study through the kindness of Dr. George L. Streeter, acting director of the Carnegie Institute of Embryology. It can be seen that the uterine canal scarcely permits of differentiation into cervix and corpus. It is merely a straight tube of uniform caliber, although the upper sixth or so obviously represents the future fundus. The high position of the uterus at this age can be appreciated by observing that it is almost entirely above the level of the symphysis, that is, that it is essentially an abdominal organ, like the bladder at this stage. It is uncommon to see either sharp anteflexion or retroflexion at this period, although a moderate antecurvation of the uterus (uterus antecurvatum) is very frequent — indeed, it may be said to be the rule in the later stages of fetal life.

Throughout the whole fetal epoch a preponderance of the cervix over the corpus uteri is noteworthy. The well known characteristics of the epithelium in the different portions of the adult canal do not become noticeable until the fetal development is far advanced. As in the adult, the cervix is then lined by tall, slender "picket" epithelium, while the corpus is covered by cells of a shorter and broader columnar type. The time of the appearance of gland elements is quite variable. In some uteri they are as well developed, especially in the cervix, in the last period of fetal life as they are in others during the fifth or six year of extrauterine development. Toward the very end of the fetal phase, the uterus exhibits a rather striking acceleration of growth, affecting the fundus as well as the cervix. After the birth of the child there is a rather pronounced shrinkage or involution of the fetal uterus, as will be discussed later.

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* From the Gynecological Department of Johns Hopkins University.

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* Because of lack of space, this article is abbreviated in The Journal. The complete article appears in the Transactions of the Section and in the author's reprints. A copy of the latter will be sent by the author on receipt of a stamped addressed envelop.

THE UTERUS OF INFANCY AND CHILDHOOD

These two epochs are placed together because of the fact that, to all intents and purposes, the uterus is a stationary organ throughout both periods. It would be difficult to distinguish, either from size or from shape, between the uterus of the child of 1 year and the child of 8 or 9 years. As compared with the fetal uterus, there is perhaps a lesser degree of disproportion between the cervix and the corpus, the latter having become a little longer and somewhat more clearly differentiated (Fig. 2). The occurrence of sharp anteflexion, and, to a less extent, of retroflexion, is far more common during this stage than during fetal life. The explanation of this fact will be discussed under another heading.

THE UTERUS AT PUBERTY

With the awakening of the ovaries at puberty comes a very remarkable stimulation of uterine growth. Within a short period, the uterus may almost double its size. A comparison of two of my specimens, one representing the uterus of a 9 year old child, and the other that of a girl of 14, gives a vivid impression of the change in uterine size and form that puberty brings with it. The 9 year old girl's uterus is 35 mm. long, while the uterus of the 14 year old girl, who had just commenced to menstruate, measures 57 mm. in length. There is relatively little difference in the length of the two cervices, one measuring 22 mm. and the other 27 mm. The body of the 14 year old uterus, however, is more than twice the length of that of the 9 year old organ, measuring 30 mm., while the latter is only 13 mm. long. In addition, there is a very striking difference in the width and in the thickness of the walls of the two uteri. The characteristics of the 14 year old uterus are those of the adult organ—the well developed convex fundus which is at least equal to the cervix in length, the thick musculature, and the regular monthly cycle of histologic changes in the endometrium (Fig. 3).

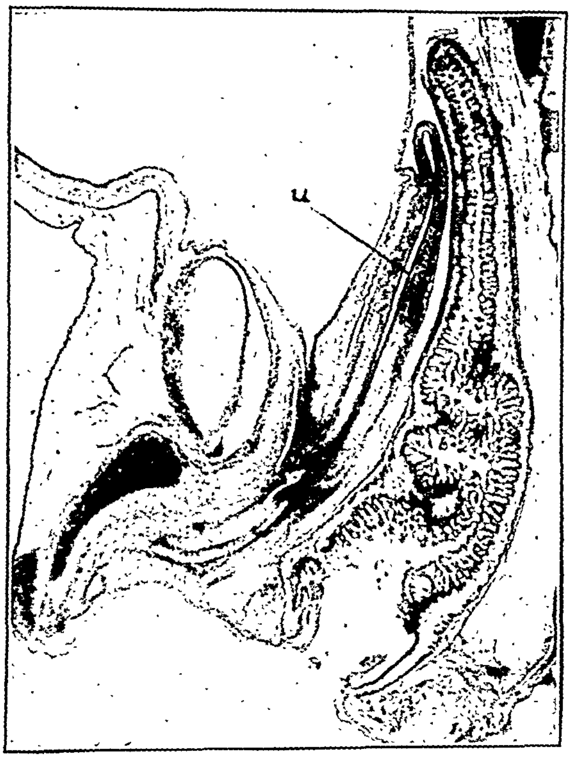

Fig. 1.—Sagittal section of pelvis of 12 weeks old fetus, showing characteristic fetal uterus (*u*), made up almost entirely of cervix.

THE QUESTION OF THE ISTHMUS UTERI

The usual division of the uterus into the corpus uteri and the cervix uteri has much to commend it, especially from the point of view of simplicity. On the other hand, there are some advantages in the less popular plan suggested by Aschoff in 1906,[5] of considering the uterus to be made up of three segments, namely, the corpus, the cervix and the isthmus uteri. Certainly the isthmus possesses distinctive histologic characteristics which entitle it to separate consideration, and which, as I shall show, are of no little significance in the explanation of certain physiologic and pathologic occurrences.

From an obstetric standpoint, this segment of the uterine canal is of great importance by reason of the fact that the lower uterine segment of the parturient uterus is derived from it. A bitter controversy, stretching over a number of years, and still unsettled, has been waged among German obstetricians as to whether the lower uterine segment is to be looked on as derived from the cervix alone or from both the cervix and the corpus uteri. With this discussion we shall not here concern ourselves, except to say that the weight of evidence points to the correctness of the latter view. The problem is made much simpler if we apply to it the three segment conception of the uterus, that is, if we distinguish, in addition to the cervix and corpus, a third connecting segment, or isthmus. The os internum anatomicum, which is the upper limit of the isthmus, corresponds to the contraction ring of Braune (Bandl), while the lower limit of the lower uterine segment is the os internum histologicum. In other words, according to this division, the isthmus of the nonpregnant uterus exactly corresponds to the lower uterine segment of the parturient woman.

The gynecologic importance of the isthmus rests principally on the fact that congenital flexions of the uterus probably always take place at the isthmus. Furthermore, although this cannot be stated with the same support of histologic study, it is probable that the acquired flexions of later life also occur at the same segment. Its designation by Aschoff as the *Scharnier* or "hinge" of the uterus would thus seem to be justified. It is common to observe flexion of the uterus, usually in the form of anteflexion, in very early life. In every such anteflexed uterus that I have been able to study microscopically, the angle of flexion has been in the middle of the isthmus and not at the internal os, as has so generally been believed. Opportunities for study of congenital anteflexion of the uterus in adult women are scarce, as such uteri are rarely removed at operation, and necropsy material of this sort is hard to obtain. Indeed, I know of but one observation along this line, that of Hegar.[6] The uterus was removed by vaginal hysterectomy from a girl of 24, on account of severe dysmenorrhea that had resisted all other forms of treatment. The uterus was sharply anteflexed—as Hegar terms it, "hyperanteflexio uteri congenita." Examination showed three well marked segments with the histologic characteristics already described. The angle of flexion was within the limits of the well marked isthmus. Congenital retroflexions are far less frequent than anteflexions. No example has been seen in my series. There can be no doubt, however, that, as with anteflexions, the point of angulation is in the isthmus. The same may be said of lateroflexion, slight degrees of which are very common in fetal and infantile uteri.

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[5] Aschoff: Ztschr. f. Geburtsh. u. Gynäk., 1906, **58**, 328.

[6] Hegar: Beitr. z. Geburtsh. u. Gynäk., 1909, **14**, 141.

Flexions of the uterus are far more commonly observed in the uterus of the infant or young child than during fetal life. I believe that this is due to the fact that in the fetal organ the isthmus is practically undeveloped, while, on the other hand, in the infantile uterus, it forms a large and important segment. It is easy to see how abnormal length and flexibility of the uterine isthmus may result in the production of flexion of one form or another. Once the uterus becomes angulated, the flexion must be looked on as permanent. After the age of puberty the isthmus becomes small and more or less vestigial, so that it is probable that acquired anteflexion rarely occurs during this epoch.

The point that I should like to reemphasize is that it would be of value to the gynecologist to think of the uterus as a composite organ, in the sense that it is made up of three separate segments. At various periods of life one or the other of these segments predominates in size and perhaps in function. Each segment apparently has its own function, and each seems to be under the control of a different endocrine influence. Such a conception as this would seem to be more in accord with fact and more conducive to fruitful observation than the custom of looking on the uterus as merely an organ entity in itself, going through various physiologic and pathologic changes *en masse,* as it were.

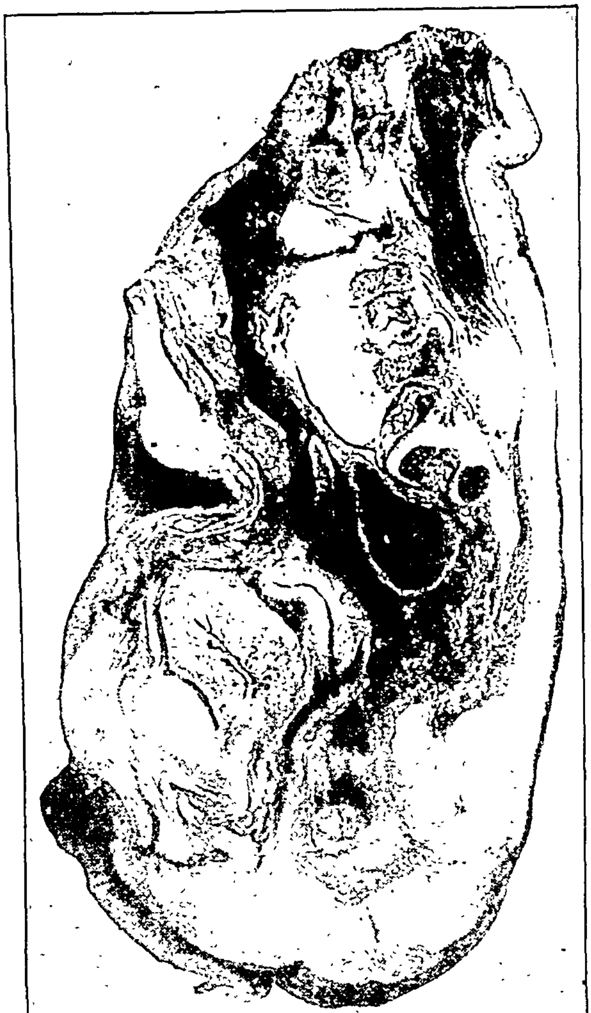

Fig. 2.—Sagittal section of pelvis of infant of 9 months. The division of the uterus into cervix and corpus is clear, the former still greatly predominating. Note also the anteflexion of the uterus.

TYPES OF UTERINE HYPOPLASIA

Throughout the consideration of this subject it is important to remember that hypoplasia may manifest itself in either one of two principal ways — an arrest of growth or an arrest of differentiation. Perhaps the best analogy to bear in mind in this connection is furnished by the striking work of Gudernatsch[8] on the effects of thyroid and thymus extracts on tadpoles. On the administration of thymus, the tadpoles grew to very large size, but still remained tadpoles. Feeding with thyroid, however, produced an altogether different result—the tadpoles developed rapidly into frogs. Under normal conditions, the growth and differentiation of the uterus proceed more or less hand in hand. Under certain conditions, however, it would appear that one may lag far behind the other, so that we may see a uterus equal in size to the normal adult organ, and yet having the form and segmental proportions of the infantile uterus. On the other hand, in those cases in which growth seems to have been retarded, while differentiation has proceeded normally, a very much undersized uterus may have the form of the normal mature organ.

The Uterus Foetalis. — The development of the uterus may be arrested in the fetal, or embryonic, stage, in which case it possesses the characteristics already described for the fetal uterus. This so-called uterus foetalis (uterus embryonalis, uterus rudimentarius) is made up almost entirely of cervix, the fundus being extremely rudimentary. As a matter of fact, it may be almost impossible to distinguish any differentiation into two segments. The uterocervical canal is either straight or slightly antecurved. Anteflexion is uncommon at this stage. The characteristics of this type of uterine hypoplasia are well shown in Figure 4.

The Uterus Infantilis. — This term, strictly speaking, should be restricted to the uterus whose development has been arrested during the period of infancy or childhood, for as has been shown, the infant uterus does not differ materially in form from that of the child up to the age of puberty. The cervix still definitely predominates over the corpus, but the two are now clearly differentiated. The fundus is much better developed than in the infantile uterus, and its walls are also somewhat thicker. It still lacks, however, the broad convexity that is characteristic of the mature uterus. Anteflexion is a common but by no means invariable finding, the angle of flexion being always within the limits of the isthmus (Fig. 5). The anteflexion is usually of the cervicocorporeal type, the small conical cervix pointing downward and forward in the axis of the vagina, while the fundus is bent forward on the cervix, often at a very acute angle. Hegar divides infantile uteri into two principal groups: 1. Those in which the uterus possesses the infantile characteristics above enumerated, especially as concerns the predominance of the cervix, but in which the organ is of normal size. This type he calls "the uterus infantilis nonhypoplasticus." 2. Those in which the size and shape of the uterus are infantile, the so-called "uterus infantilis hypoplasticus."

The Uterus Subpubescens. — In some respects the most interesting forms of uterine hypoplasia are those of mild degree—those in which the inhibition of development does not assert itself until the prepuberal period. The difference between the uterus of this type and the normal pubescent organ is often slight, so that the designation of this group as "subpubescent" would seem fitting. When the ovarian influence, so important at puberty, is tardy in its appearance, the fundus remains undeveloped; that is, there is a persistence of the infantile type already described. In other cases, again, the anatomic defect of the fundus may be very slight, so slight as to be scarcely appreciable clinically. All possible grades of hypoplasia may be distinguished between these two extremes. As in the infantile group, anteflexions are very common and are usually of the cervicocorporeal variety (Fig. 6).

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[8] Gudernatsch: Am. Jour. Anat., 1914, **15**, 431.

CLINICAL CHARACTERISTICS OF UTERINE HYPOPLASIA

Both of the two great functions of the uterus—menstruation and reproduction—are profoundly influenced in the various forms of uterine hypoplasia. As regards the effect on menstruation, we may distinguish two groups of cases. In one type, which may be spoken of as the "amenorrheic," the predominant symptom is amenorrhea or scanty menstruation, with little or no dysmenorrhea. In the second group, on the other hand, the conspicuous symptom is dysmenorrhea, the amount of flow being most frequently scanty, but sometimes being normal or even excessive. This second type may be designated as the "dysmenorrheic." No sharp dividing line can, of course, be drawn between the two groups, the symptoms often overlapping to a certain degree.

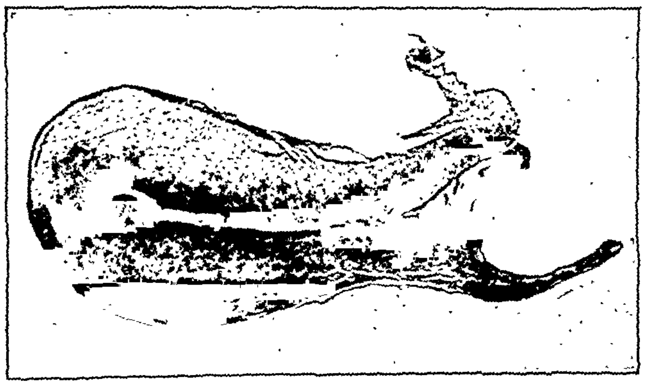

Fig. 3.—The uterus of a girl of 14, showing the great development of the corpus uteri at puberty. Note the convexity and the thick walls of the fundus.

The amenorrheic syndrome is constant in the extreme forms of uterine hypoplasia, such as uterus rudimentarius. Furthermore, it is often observed with the infantile uterus. On the other hand, menstruation may be normal, or perhaps even excessive, in those cases in which the fundus is only slightly subnormal. Secondarily, of course, amenorrhea may be observed even in large, well developed, and perhaps multiparous uteri, as in the well known Fröhlich's syndrome, which is due to hypopituitarism. Were it possible to exclude in any way the influence of the various extragenital endocrine bodies, which, of course, is not the case, the development of the uterine body could be looked on as, in a general way, an indication of ovarian activity. Certainly, as has already been emphasized, it is the fundus and not the cervix which is functionally linked with the ovaries.

Dysmenorrhea is observed far more frequently in the milder degrees of hypoplasia than in very rudimentary uteri. The reverse is the rule with amenorrhea, which is always seen with the rudimentary type of uterus, but is often lacking in the slightly subnormal. Always remembering, of course, that we are dealing with only the primary types of amenorrhea and dysmenorrhea, the conclusion seems warranted that, as a symptom, amenorrhea is indicative of a greater degree of hypoplasia than is dysmenorrhea.

The clinical manifestations of congenital hypoplasia may be conveniently studied under two headings: (1) symptoms associated with the menstrual function, and (2) those associated with the reproductive capacity.

The Menstrual Symptoms.—Retarded Puberty: In many cases of uterine hypoplasia, as observed in the adult woman, inquiry reveals that menstruation was inaugurated at a period much later than usual. Instead of appearing at the age of 13 or 14 years, the function in many of these cases is established perhaps as late as 17 or even 19. If the age of puberty is very much retarded, and especially if retardation of the menstrual function is associated with absence of such secondary sex characteristics as development of the breast or the appearance of hair over the mons and in the axillae, congenital hypoplasia is usually only a local manifestation of a general underdevelopment, the result of a more or less profound endocrine disturbance.

Amenorrhea or Scanty Menstruation: Menstruation is much more likely to be deficient than excessive in cases of uterine hypoplasia. This, as has already been emphasized, is especially true of the more advanced grades. I have reviewed the histories of sixty cases from this point of view. The cases in this series included uteri that were described by such terms as "infantile," "small and anteflexed," etc. It was probably made up chiefly of uteri of the infantile and subpubescent groups. A subdivision was made into those in which the menstrual flow was scanty and those in which it was not deficient, that is, those in whom, as far as could be judged from the patient's own statement, the amount of flow was either moderate or profuse. In thirty-eight cases menstruation was scanty, in twenty-two it was either moderate or excessive. The findings in this small series of cases, in spite of the crudity of the method of study, are nevertheless in accordance with general experience. In the marked cases of uterine hypoplasia, in which amenorrhea is practically always seen, there is usually associated with it a greater or less degree of constitutional change, most commonly adiposity. This syndrome—sexual hypoplasia and obesity—is the same as that which is so characteristic of the acquired condition, which is now so clearly recognized as "adiposogenital dystrophy," or Fröhlich's syndrome. Like the latter, it is probably due to a hypopituitarism, one condition being congenital and the other being acquired. In the less severe forms of hypoplasia, menstruation may not be altogether absent, its rhythm and amount being in a general way indicative of the degree of hypoplasia of the uterus. As to the cause of the amenorrhea in these cases, three factors must be considered:

1. Endocrinopathies of one form or another, involving especially the ovary or the pituitary, may furnish the responsible factor.

2. The small area of the endometrial surface may explain the menstrual deficiency. Since the menstrual blood has its source in the endometrium,

it is easy to understand how a lessening of the latter may, other things being equal, lessen the amount of menstrual blood lost, just as the increase of the endometrial surface in cases of adenomyoma of the uterus may cause excessive menstrual bleeding.

3. It is possible that the anatomic defect in the uterus may be associated with a defect in the physiologic function of the endometrium. As I have elsewhere emphasized, the endometrial hyperemia evoked by the ovarian hormone is not in itself sufficient to explain the bleeding of menstruation. Such an idea would be foreign to our conception of the nature of hyperemia, which is never associated with any such wholesale exodus of blood elements from the vessels to the surrounding tissues as is seen in the course of menstruation. It seems essential to assume that some local physiologic factor in the endometrium must be responsible for the increased permeability of the blood vessels, which allows of this menstrual migration of blood corpuscles from the vessels. While little scientific evidence can as yet be brought forth to support the idea, it is possible that the amenorrhea in cases of uterine hypoplasia is due to a deficiency of this local physiologic factor.

Dysmenorrhea: The existence of even extreme grades of hypoplasia of the uterus, with the amenorrheic clinical syndrome already described, is not incompatible with perfect health and well-being. On the other hand, the milder forms of hypoplasia are often associated with spasmodic dysmenorrhea of so severe a grade as to wreck the physical and nervous constitution of the patient. As a rule, this type of menstrual pain makes its appearance a day or two before the actual onset of the flow, continuing usually until the latter is well established. It is commonly described as cramplike or colicky, differing from the congestive type of dysmenorrhea in that the latter is usually dull, aching and constant. Examination of patients suffering with spasmodic dysmenorrhea often reveals that the uterus is not only hypoplastic but also anteflexed; hence, it is not surprising that the anteflexion is usually held responsible for the menstrual pain. As a matter of fact, it was this frequent association of anteflexion and dysmenorrhea that led Mackintosh, as far back as 1836, to urge the importance of mechanical obstruction in the uterine canal as the cause of dysmenorrhea: "Nulla dysmenorrhea nisi obstructiva," as Marion Sims put it.

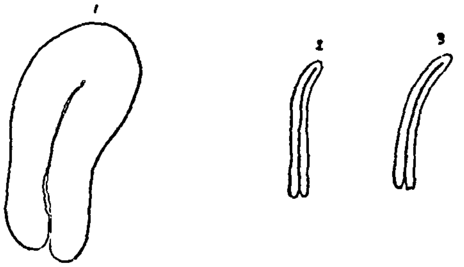

Fig. 4.—Illustrating the fetal type of uterine hypoplasia, (2) and (3), as compared with the normally developed uterus (1).

Evidence is accumulating, however, to show that the uterine flexion and the dysmenorrhea are not to be looked on in the relation of cause and effect. As many cases of primary dysmenorrhea are observed without anteflexion as with anteflexion. Furthermore, it is common to find even sharp anteflexion without dysmenorrhea. Herman[9] states that fully one half of all nulliparous women have anteflexed uteri, so that it is not at all surprising that dysmenorrhea and anteflexion often coincide. Finally, it has been shown that in dysmenorrheic women in whom there is also an anteflexion of the uterus, a probe can easily be passed into the uterine canal during the height of the menstrual pain, indicating the absence of any actual obstruction. The proof seems quite convincing that, while anteflexion and dysmenorrhea often coexist, there is no direct relationship between them.

As to what is actually the cause of the spasmodic dysmenorrhea so frequently observed in young women with defective uterine development, we are unfortunately not in a position to speak with any degree of certainty. I have elsewhere recorded studies indicating that the endometrium of hypoplastic uteri exhibits the usual menstrual cycle of histologic change seen in normally developed uteri.[10] In the paper referred to I suggested that the hypoplasia involves the uterine musculature more than it does the mucosa, and that the dysmenorrhea may be due to the inability of the endometrium at the time of menstruation to be accommodated within the undersized uterine cavity. The uterine muscle is thereby excited to cramplike contractions in an effort, as it were, to expel its own endometrium. This conception would seem to be borne out by the fact that the menstrual pain in these cases is usually relieved as soon as the menstrual flow is well established, that is, as soon as the swelling of the endometrium diminishes.

Sterility.—As to the cause of the sterility that is observed so frequently in connection with hypoplasia of the uterus, it is difficult to believe that the small size of the uterus or any histologic peculiarity of its mucosa has any important bearing on this matter. If an impregnated ovum can implant itself on the wall of the fallopian tube, which is certainly not adapted for gestation purposes, there would seem to be no anatomic reason why it should not take root in even a very rudimentary uterus; and yet this never happens. In an indirect way, at least, it can be shown that the ovaries may function normally in cases of uterine infantilism, so far as the menstrual process is concerned.[10] It would seem probable, therefore, that the bar to conception must lie within the uterus and probably within the mucosa. Since the latter is histologically normal, we must apparently explain the sterility as a manifestation of pathologic physiology, rather than pathologic anatomy.

There is now a fairly general acceptance of Fraenkel's view that the corpus luteum, in addition to its menstrual function, is also of importance in maintaining the fixation of the ovum in the early part of pregnancy. It is possible, therefore, that in these cases of genital hypoplasia this local factor in the endometrium is lacking, preventing the implantation of the ovum. Adler's work[12] indicates that the presence of this important local element, whether hormone or enzyme, is dependent on corpus luteum activity, so that, in the final analysis, sterility of this type can perhaps be explained as due to disturbances of the endocrine system.

TREATMENT

What little I shall have to say about treatment will be limited largely to comments on the methods in vogue at present. The treatment of hypoplasia of the uterus is unsatisfactory, because it cannot in the present state of our knowledge be directed to the underlying cause of the condition. As has been brought out, the defective development of the uterus in these cases is almost surely due to some form of endocrine disorder. Which of the ductless glands are concerned, what the nature of the disorder is, and how best to correct it—all these are problems still unsolved.

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[9] Herman: Brit. Med. Jour., 1909, **1**, 937.

[10] Novak, Emil: Surg., Gynec. and Obst., 1915, **21**, 336.

[12] Adler: Arch. f. Gynäk., 1912, **95**, 349.

Organotherapy has, of course, already been resorted to by many on the slim basis of the few facts that seem fairly well established. Ovarian extracts of one orm or another, either of the whole organ or of the corpus luteum alone, have been given either by mouth or hypodermically. Important as the corpus luteum is in menstruation, and valuable as its administration may be in certain menstrual disorders, I know of no evidence indicating that this structure plays any part whatsoever in the development of the uterus. As a matter of fact, developmental defects of this organ commonly arise long before puberty, that is, long before corpora lutea are found in the ovary. It seems justifiable to conclude that if organ extracts are to be given in cases of uterine hypoplasia, the ones to be chosen are extract of the whole ovary or extracts of other ductless glands that probably play an important part in the early growth of the genital canal. Pituitary extract suggests itself in this connection, as well as the still unsatisfactory extracts of the pineal and thymus bodies. Suffice it to say that this method of treatment has been carried out by various workers, with very little success. Failure does not, however, necessarily invalidate the correctness of the theories on which this treatment is based. It is far more likely to be due to the imperfection of our knowledge as to the active principles of the various ductless glands and of the technic of preparing extracts for clinical use. Much might be said in the discussing of this one point, but there is little doubt that the persistent groping of clinicians and laboratory investigators will sooner or later lead us into the light. The type of hypoplasia may be of some importance in suggesting the plan of treatment. Theoretically, ovarian extracts would seem to be indicated especially in the subpubescent group, while pituitary extracts suggest themselves in the treatment of the fetal and infantile type of uteri.

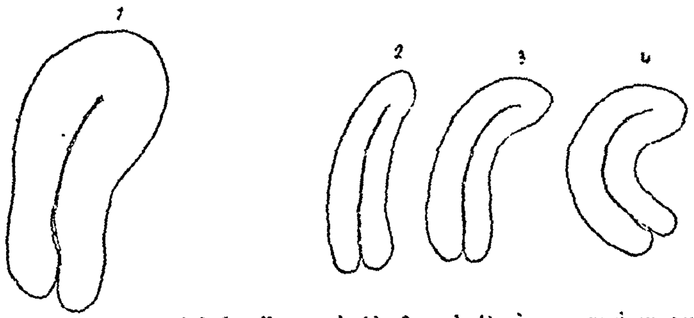

Fig. 5.—Types of infantile uteri (2, 3 and 4), in comparison with the normal uterus (1). In all the cervix predominates over the corpus. In 3 is shown a moderate corporeal anteflexion, while 4 illustrates the more characteristic cervicocorporeal anteflexion. In some cases the cervix is normal, in others long and conical, with pinhole os. Uteri of infantile form may be of practically normal size.

Aside from this as yet undeveloped plan of treatment by organ extracts, the treatment of uterine hypoplasia presents a more or less composite problem, being really directed to the treatment of a whole group of symptoms and allied disorders, especially amenorrhea, dysmenorrhea and sterility. One or more of these clinical manifestations usually brings the patient to the physician for treatment, as without them she would be ignorant of the existence of the hypoplasia.

Unfortunately, amenorrhea is often treated by practitioners of medicine as if it were a disease in itself, rather than a mere symptom. Unlike excessive menstrual bleeding, the cause of amenorrhea is far more frequently constitutional than local. In the amenorrhea of uterine hypoplasia, however, we have to deal with a local anatomic defect in the genital system, although this is quite possibly secondary to a constitutional endocrine disturbance. At any rate, little benefit can be expected from hematinics and emmenagogues, so often prescribed in these cases. The administration of the latter is especially to be decried. How a drug supposedly causing merely a pelvic hyperemia can be expected to establish such a regularly recurring physiologic process as menstruation, I have never been able to understand.

As for the treatment of the dysmenorrhea so frequently associated with hypoplasia of the uterus, this also must be looked on as leaving much to be desired. During the actual attack, treatment is, of course, directed to the relief of the menstrual pain. The two drugs most effective for this purpose are the two that for obvious reasons are especially to be avoided, morphin and alcohol. Taken all in all, the drug that has in my experience given the best results in most cases—other than the two I have just mentioned—is atropin. This method of treatment, which I have described elsewhere,[13] is based on very rational principles, and its results, while not constant, are better than those yielded by any other drug treatment of which I know.

Not infrequently, the aid of surgery is invoked in the effort to relieve the intense suffering of primary dysmenorrhea. The operation most commonly done is that of dilatation of the cervix. Formerly, this was, as a rule, accompanied by curettage, but now, happily, it is seldom that we scrape away the perfectly normal endometrium which is practically always found in these cases. There is neither reason nor advantage in doing so. Holden's study[14] of the results of dilatation of the cervix in ninety-five cases of primary dysmenorrhea treated in the Gynecological Clinic of Johns Hopkins is far from encouraging. Forty per cent. of the patients were relieved for as much as one year, 7 per cent. of these suffering a later recurrence; 30 per cent. exhibited slight or temporary improvement, while the remaining 30 per cent. were in no way benefited by the operation. These figures, I believe, will about represent the experience of most gynecologists.

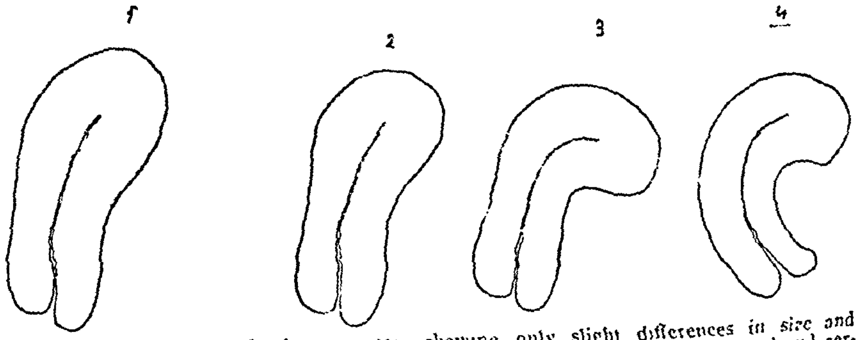

Fig. 6.—Types of subpubescent uteri, showing only slight differences in size and form from normal uterus (1) In 3 and 4 are shown, respectively, corporeal and cervicocorporeal anteflexion. Drawings in Figures 4, 5 and 6 by Miss Ethel Norris.

The employment of the stem pessary, so enthusiastically advocated by Carstens and others, is based on the idea that the pessary, by causing expulsive efforts on the part of the uterine muscle, exercises the latter and causes an increase in the development of the uterus. This plan of treatment is not without danger, as I myself have seen several cases of troublesome endocervicitis following the use of the stem pessary. To judge from the reports in the literature, however, the results are better than those following simple dilatation. As for the various plastic operations on the cervix that have at different times been advised for the relief of dysmenorrhea, such as those of Sims, Dudley, Pozzi, or that recently described by Frank, I can see absolutely no excuse for their performance. All of them are based on the erroneous impression that the dysmenorrhea is due to cervical stenosis; and all of them should, therefore, be abandoned.

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[13] Novak, Emil: The Atropin Treatment of Dysmenorrhea, The Journal A. M. A., Jan. 9, 1915, p. 120.

[14] Holden: Am. Med., 1905, **10**, 776.

Much of what has been said by way of criticism of the present-day treatment of dysmenorrhea applies also as regards the sterility so frequently observed in the same group of patients. Dilatation with or without the subsequent use of the stem pessary, as well as plastic operations of one form or another, have been resorted to in an effort to relieve the sterility, with results even less gratifying than in the case of the dysmenorrhea. The reason for the failure of this method of attacking the problem lies in the fact that the sterility, as has already been discussed, is most likely due to a physiologic defect in the endometrium, that is, the absence of some factor essential to the implantation of the ovum. Here again we hark back to disorders of the internal secretory system as the ultimate cause. This, after all, is the conviction borne in on any one who studies this general problem, whether or not he be a ductless gland enthusiast or "faddist"—the conviction that the day will come when these very numerous cases of primary amenorrhea, primary dysmenorrhea and sterility, which are associated with uterine hypoplasia, will be successfully treated by correcting the endocrinopathy responsible for the uterine defect.

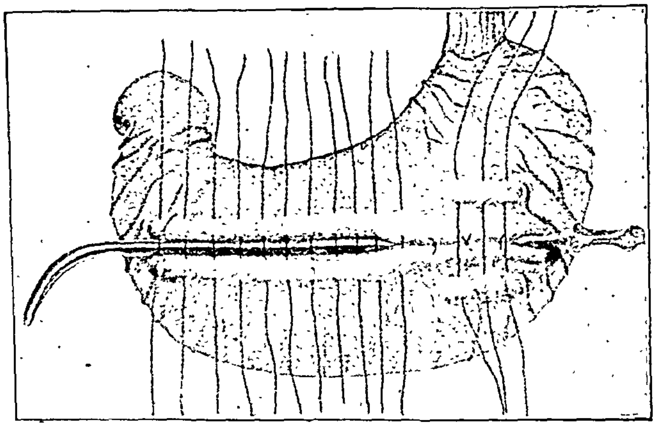

Fig. 1.—Plication of stomach; first line of sutures in place, three tied; three of second line in place.

Utility of Birth Statistics.—The enforcement of legislation for the registration of births and the creation of a sentiment among all classes for the recording of proper vital statistics would, if undertaken at the present time, place us in the position of being able during the approaching census year to measure accurately the mortality among infants throughout the country. Not only should our efforts be confined to a complete registration of births but also to the necessity of more accurate statements of the causes of death on certificates of infants under 1 year of age. Certificates bearing as a cause of death such indefinite statements as marasmus, inanition, asthenia, convulsions and prematurity should, if not tabued, at least be queried as to underlying causes. With a complete registration of births many problems now occupying the public mind can be more intelligently discussed, such as illegitimacy, comparative fecundity of various race-stocks, the effects of hazardous occupations of parents on their generative faculties, and the determination of the ages of greatest fecundity.—W. H. Guilfoy, M.D., Tr. Am. Assn. for Study and Prev. of Infant Mortality.

VISCEROPTOSIS

A NEW OPERATION FOR ITS RELIEF *

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NEW YORK

The vicious consequences of visceroptosis, both immediate and remote, are so manifest and so generally accepted by the profession that they need no amplification. The etiology is referred to congenital influences, the lack of proper early training and development, and to careless, indolent habits of standing, sitting, walking and general carriage of the body in all its attitudes. The condition per se may mechanically produce localized pain and distress and interfere deleteriously with nutrition by retention of food in the stomach and by constipation or stasis of the alvine current in its course through the intestine. The only satisfactory etiologic factor that explains the ulterior complex symptomatology is to be found, however, in the little mischief makers that generate ferments and toxins which, circulating in the blood, poison the nerve centers and the brain.

The neurologists go even further than this. They do not admit that it is necessary to await the appearance of ptosis to afford habitat for noxious bacilli, microbes or parasites — even Glénard referred to a period preceding ptosis and claimed that toxins of alcohol, fermenting food and the puerperium, of typhoid and malarial infections, traumas and even emotions of fright and chagrin, all or any one, acting through the autonomic or sympathetic nervous systems might be basic factors in causing structural changes in the viscera and their malposition in the abdominal cavity. This *a priori* theory of Glénard's has, since the establishment of the microbe theory of disease, been satisfactorily confirmed by physiologic experimentation. These structural changes cause stasis in the alvine current which, in turn, affords additional facilities for development of increased supplies of toxins; these, carried to the autonomous nerve centers, intensify in turn the deleterious changes in the viscera. Thus is established the vicious circle, or syndrome. In its complete form it includes the gastro-intestinal disturbances arising secondarily in the viscera; the pains in the abdomen due to organic changes in the viscera; kinking and other distortions in their walls; pressure on the nerve ends; the referred pains in other parts of the body; the crisis, accompanied by nausea, vomiting and collapse; and the neuropathic mental state of the patient, with its depressions, its querulousness, its maladjustment to environment and its great susceptibility to fatigue.

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* Read before the Section on Obstetrics, Gynecology and Abdominal Surgery at the Sixty-Ninth Annual Session of the American Medical Association, Chicago, June, 1918.

* Because of lack of space, this article is abbreviated in The Journal by the omission of sixteen case reports and four roentgenograms. The complete article appears in the Transactions of the section and in the author's reprints. A copy of the latter will be supplied by the author on request.

The ptosis not only causes a retardation of the alvine current—a stasis—due to redundance, persistent dilatation, sharp angulation and kinks and adhesions that necessarily attend the displacement and the opposition of gravitation to the reversed direction of the current, but also subjects the vertebral ganglions and their connections to torsion, pressure and stretching, while absorption of the toxins overwhelms the sympathetic system, and perchance the brain centers as well.

TREATMENT

Four forms of treatment are to be considered and are indicated in this class of cases: (1) the skill of the internist, with all his resources to eliminate the toxins; (2) the physical culture expert with his gymnastic exercises, his postural treatment, his belts, his corsets and his high heeled shoes; (3) surgical treatment to restore normal position, relieve obstructive angulation, false adhesions, and pressure and drag on the sympathetic ganglions; and (4) neurologic treatment to relieve the depressive emotional disturbances. This does not necessarily imply four distinct specialists but, rather, one broad minded surgeon who embraces them all, and should with reasonable cooperation on the part of indicated specialists actually be able to handle the different phases of treatment in the majority of cases.

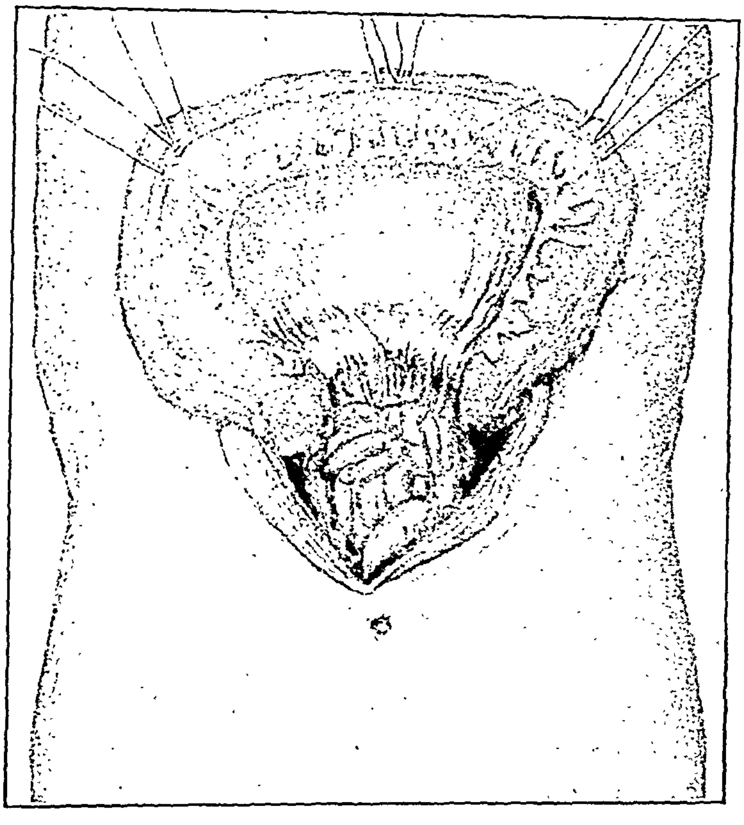

Fig. 2.—The sutures as applied to the colon.

The postural, gymnastic and corset treatment is a most excellent prophylactic in early life in patients exhibiting a constitutional hereditary predisposition, what Steller calls the habitus enteroptoticus of asthenia universalis congenita, that is, patients with forward protrusion of head and chin, long arms, thin neck, narrow elongated chest, sloping shoulders, lack of adipose, flat abdomen and pot belly. A strict regimen, such as described by Reynolds and Franklin Martin, persistently carried out and continued for years will correct much and prevent more; but the rub comes in carrying the patient along to the sticking point beyond which relapses may not occur. It is a tiresome, discouraging job for both patient and physician.

When the patient has reached the stage of actual ptosis of stomach and colon, in which angulations have become obstructive and adhesions have formed, nothing can avail but surgical interference. The extreme colectomy of Arbuthnot Lane is rarely indicated unless we accept the teachings of Reed that therein lies the final efficient corrective for epilepsy. But certainly nothing is more rational than the relief of obstructive angulations, adherent kinks and painful pressure by the permanent restoration to normal position of the overstretched, tired out, devitalized structures. Many methods have been devised to accomplish this end, some of which have stood the test of time and have apparently become standardized. It is not my purpose to go into an analytic discussion of them or indulge in comparisons. My mission is to present a method which I have evolved in dealing with cases of visceroptosis. It has been put to a sufficient test, I think, to make it worthy of consideration.

My first experience was gained in 1889:

Case 1.—A woman about 25 years of age, an expert stenographer and typewriter, a nervous dyspeptic and neurasthenic wreck, had a ptosed and dilated stomach. After treating her medicinally and washing out her stomach morning after morning before breakfast for weeks and months without much improvement, she announced to me one day that she was tired of treatment and ready for the operation I had discussed with her some weeks previously. Accordingly she went to the Polyclinic Hospital and was made ready for the operation. Through a free incision above the umbilicus, I plicated the anterior wall of the stomach, parallel to the long axis. Just above this line two sutures were passed perpendicular to it through the peritoneal and muscular wall of the stomach. Both ends of each suture were then carried up through the peritoneum and fascia of the abdominal wall, but not the skin, and made to appear, each on its own side, in the upper angle of the abdominal wound. After the closure of the peritoneum the two ends of each suture were tied, cut short and buried in the closure of the abdominal incision. I had heard Dr. Emmet tell many a time, during my service at the Woman's Hospital, of suspending the woman slaves of the South between trees in hammocks with their heels higher than their heads for the relief of prolapse of the uterus. It occurred to me that this posture would assist in taking the strain off the stomach sutures, and when the patient was put to bed, the foot of the bed was elevated by a chair placed under the foot, thus securing what is familiarly known as the Trendelenburg posture This was maintained for two weeks, when the bed was gradually lowered to normal at the end of three weeks, the patient leaving the hospital at the end of the month.

Perfect success attended the procedure. The patient gained flesh and nerve power, returned to her work in three months, and continued it successfully while under my occasional observation for several years.

AUTHOR'S METHOD

From this experience I gradually evolved the method I now employ. This description embraces the complete operation in which both stomach and colon are involved in extreme ptosis and adhesions. Of course, not all the steps described are indicated in every case.

A longitudinal or transverse incision is made below the umbilicus. Through this adhesions are severed, the organs set free, the appendix removed, the caput, if overdistended, plicated; the uterus, which is frequently found displaced, restored to normal position and supported there, and, if necessary, the appendages dealt with as indicated. The incision is closed.

A longitudinal incision is then made above the umbilicus through which the upper abdominal cavity is thoroughly explored with the hand, note being made of the condition of the liver, its ligaments, the gallbladder and ducts especially. Any pathologic conditions discovered are dealt with according to indications, new incisions being made or the original one enlarged if necessary.

The stomach is then delivered through the wound, and inspected and palpated for ulcers and pyloric irregularities. If dilated, the anterior wall is depressed with a sound along the middle line, and over this the stomach wall is plicated in a double row of linen sutures. In a line just above or below this, and midway between the extremities of the stomach, two or more linen sutures are threaded along in the stomach wall, including the peritoneal and muscular coats, each one being buried for from one-half to three-fourths inch. The stomach is returned to the abdominal cavity. The sutures still untied are left long and protruding from the wound, wrapped in sterile gauze. The transverse colon is now delivered through the wound, the omentum ligated along the border of the intestine and cut away. The hepatic flexure is picked up and two sustaining linen thread sutures are threaded along in its walls similar to those in the stomach, left long and protruding through the wound and protected by sterile gauze. Next the splenic flexure is exposed and treated similarly, and finally the transverse colon at its middle section. These sutures are all passed either just below the attachment of the mesocolon or in the broad band of the colon. The latter is firm and holds well, and is to be preferred when the colon wall is distended and thin. Three incisions, 2½ inches long, are now made through the skin down to the deep fascia, one parallel to the border of the ribs over the seat of the splenic flexure, another corresponding to this over the hepatic flexure at a slightly lower level, and a third, a transverse incision, at the midline over the stomach. The long sutures are threaded singly into a Peaslee needle, passed successively into the abdomen through the abdominal wound and brought out in the bottom of the skin incisions previously described. First the stomach sutures are passed emerging in the midline incision, the stomach restored to normal position, and the sutures drawn taut, tied and cut short. The three pairs of sutures in the colon are successively passed in the same way, each pair in the three designated loci of the colon being directed to the incision in its corresponding location. All the sutures are drawn taut to straighten out the intestine and make intimate contact between the intestine and the parietal peritoneum, and then tied externally to the fascia in the bottom of the incision and cut short. The three incisions are then closed with a subcuticular catgut suture and sealed with sterile collodion.

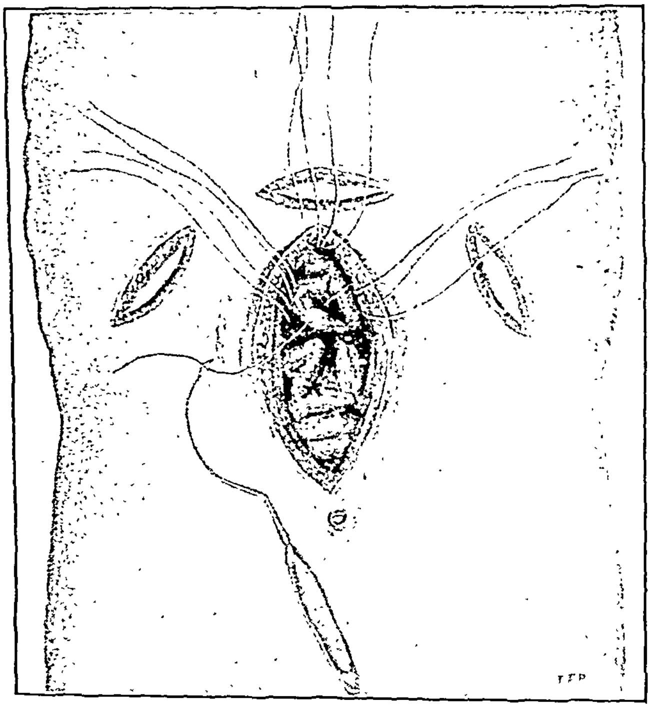

Fig. 3.—The colon has been returned to the abdominal cavity. The Peaslee needle has been threaded with one end of first suture ready for passage through abdominal wall.

It will be observed that the fixation sutures of the stomach and transverse colon are brought out through the same incision. When both organs are to be attached, the fascia in the bottom of the wound is laid bare for half an inch above and below the middle of the wound and the respective sutures passed at the extreme limits of the denuded space, the stomach sutures above and the colon sutures below. The two sutures composing the various pairs are threaded along in the walls of the viscera in the same line and about one-fourth inch apart. I have thought it advisable in some cases to link these sutures together, thus converting them into a figure of eight suture. This distributes and equalizes the tension over a broader area and diminishes the tendency to cut. The abdominal wound is closed in the usual three layer method. Adhesive plaster and bandages are applied moderately tight and the foot of the bed kept elevated from 6 to 18 inches, according to the tolerance of the patient.

REPORT OF CASES

Including the first case already reported, I have subjected, in all, seventeen women to this operation in one or more of its phases and attended with various complications, with fifteen satisfactory recoveries, some of them quite phenomenal, one unsatisfactory, and one death as a direct result of a complication, modification or supplemental procedure. All of them had suffered for years from obstinate constipation, loss of flesh and strength; some of them were broken down neurasthenics; two had ptosed kidneys (one tuberculous), one a ptosed liver, and others displaced uteri and diseased appendages. Diagnosis was made from history and symptoms, palpation and percussion, confirmed in some instances by the roentgen ray. In one or two instances the conditions were discovered on opening the abdominal cavity for diseased uterine appendages and displaced uteri. Four patients were between 20 and 30; nine between 30 and 40; three between 40 and 50, and one, 59.

Nine were housewives; three, stenographers; two, servants; three had no occupation except social duties (two of them were daughters of physicians.)

Suppuration of the sustaining sutures occurred in two cases.

One of these patients was a little, thin, poorly nourished, nervous woman with household cares; she had two little boys, and her husband was a newspaper reporter. The walls of the stomach and the intestine were stretched out and thin. The sutures doubtless pierced the lumen of the intestine or stomach, and infection arose from the contents. I removed about half of them one after another at my office during the three months following the operation. Attachment and support, however, were perfectly maintained. Four years later all organs were found in place, the patient had gained 15 pounds, and she pronounced herself perfectly well and equal to all her duties. She has reported at my office within the past month and confirms all I have said.

The patient that died (Case 12) had a most unusual elongation of the transverse colon, and after all the sustaining sutures had been placed and those at the two flexions drawn taut, the transverse portion looped away down below the umbilicus. It could not be drawn up into place at the middle point without great reduplication and kinking. That seemed to nullify all my work and if possible aggravate the original condition. I therefore resected about 8 inches of the middle section of the transverse colon, making an end-to-end anastomosis. These stitches unfortunately did not hold. There was leakage and in spite of all I could do the patient died of sepsis.

ABSTRACT OF DISCUSSION

Dr. C. A. L. Reed, Cincinnati: In enumerating the causes of visceroptosis, Dr. Goffe failed to mention that which I have found to be the most frequent cause—trauma of the abdomen. A heavy weight falling suddenly on the relaxed abdominal wall is apt to produce severe ptosis which is persistent. Another frequent cause is occupational in character operating in the case of women who are subjected to long standing or heavy lifting under conditions involving relaxation of the abdominal wall. In referring to the different forms of treatment, Dr. Goffe said we must exhaust the resources of the internist. It is perfectly proper to do this when it is shown that the problem is one for the internist, but in a case distinctly impossible of recovery from such treatment why trifle with medicinal means? The gymnastic line of treatment is very good, but the passive treatment is to be regarded as one of constructive and preoperative methods. Assuming once or twice a day the Trendelenburg position, to which Dr. Goffe has referred, with deep massage of the abdominal wall, working everything toward the waist line, is of value in keeping off the ultimate results because it does relieve the mesentery circulation of its most serious complication. Reference has been made to the bacterial evidence which exists, and I would call attention to the researches made within the last year demonstrating an anaphylatoxin germinated by blood stasis. The splendid results obtained from this fixation operation are due to the liberation of the fecal current, restoration of the normal function of the bowel. We have liberated the static blood of the mesenteric circulation and have thereby removed the cause of the anaphylatoxin factors coming from that source.

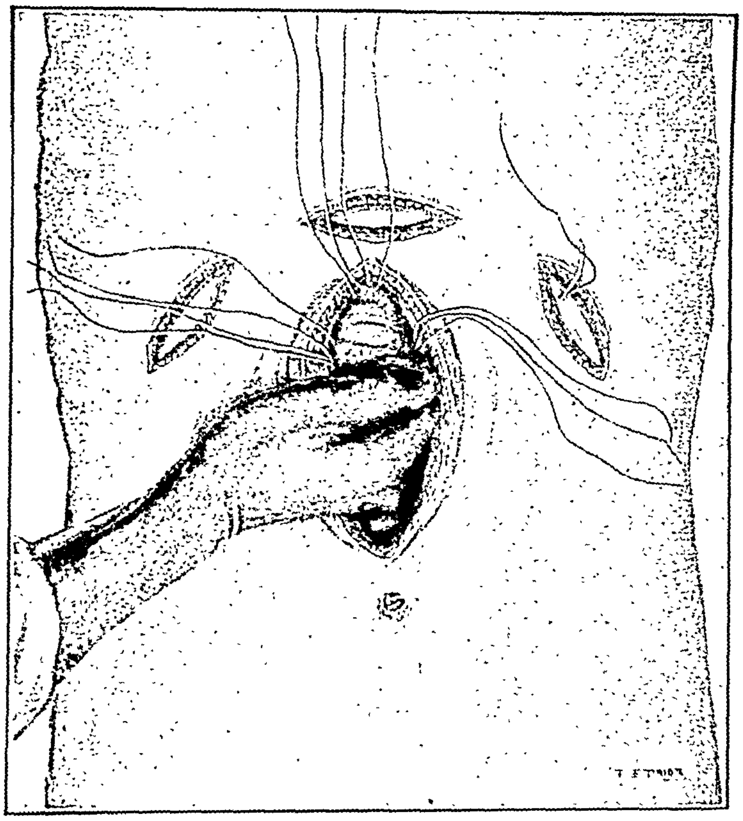

Fig. 4.—Point of Peaslee needle appearing with first suture in abdominal wound. It is unthreaded, the needle is withdrawn, and the same process is repeated with balance of sutures.

Dr. Nathan Rosewater, Cleveland: I have had excellent results in the medical treatment of numbers of these patients, so that they never have required operative interference. I refer to the use of adhesive plaster bandages without operation. The results obtained proved that engorgements into the cranial and thoracic cavities could result from spanchnoptosis and might be restored by attention to the originating cause. Such results in all my cases for the past twenty years make me doubt the necessity for operation, except where all else has failed.

Dr. W. T. Reynolds, Kansas City, Mo.: Dr. Goffe's paper has again brought up the question of what we shall do in these cases of visceroptosis. The modern fluoroscope has made it possible for us to observe these conditions in all their different phases, and one is certainly impressed with the position of the colon (especially the transverse) and the stomach. As one watches the movement of the stomach and the colon he at once questions the advisability of any sort of fixation operation. I believe Rovsing's classification of maternal and virginal visceroptosis is one of the best. In operating on women with large uterine fibroid I have often found the transverse colon lying down near the pubes without giving rise to untoward symptoms. I am convinced that only a small percentage of cases with visceroptosis are ever treated, and those who apply for treatment are of that distinct type, the undernourished. Belts no doubt have their place in the treatment of these cases, but, after all, forced recumbency and feeding with the hope that they will accumulate fat on the inside of the abdominal cavity is most important.

Dr. A. H. Aaron, Buffalo: I have seen a great number of these cases of ptosis and have been impressed with the lack of the tone of the muscles and tissues of the abdominal wall and the contained organs. The abdominal bandage, if properly applied, is curative in the great majority of these cases. You yourself must put the bandage on and see that it relieves the condition as intended, and you must study the cases fluoroscopically at various intervals of time to determine the efficacy of the support. It is desirable to treat the patient constitutionally with rest, abdominal support and forced feeding for a number of weeks, when the tissues will be improved to such an extent that the patient is in better condition for an operation if this is indicated. A greater number of these cases are medical before operation and essentially medical after operation.

Dr. J. Riddle Goffe, New York: I spoke of the gymnastic treatment as prophylactic. I have not found that it does much good as a cure. My experience with the abdominal belt is that in ninety-nine cases out of a hundred the kidney will slip down under it. The patient is then worse off than before. The gentlemen who have spoken of the advantage of the belt apparently have had unusual success with it, but this is not in accord with my experience or with my observation.

Convulsions.—There are two features which, together, cooperate in producing the symptom which we call a "convulsion." One of these we may call the chemical factor; the other the mechanical. The one, the chemical, acts in producing edema of the brain, which so long as there is a sufficient blood supply shows itself in headache, moderate dilatation of the pupils, and other changes which are suggestive of more serious symptoms which are convulsive depending on the amount of blood that reaches the swollen central nervous system. The amount of blood reaching the brain depends on the difference between the intravenous pressure and the intracerebral pressure. As long as the cerebral swelling is not great enough to bring the difference in intravenous and intracerebral pressure too close to zero a convulsion does not occur. Also as long as the intravenous pressure remains enough above the intracerebral pressure to adequately supply the brain with blood, the convulsion will not occur.—*Journal of Laboratory and Clinical Medicine.*

THE USE OF SODIUM BROMID IN ROENTGENOGRAPHY *

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ROCHESTER, MINN.

In the past, various substances have been used as opaque mediums in pyelography. Among such substances may be mentioned bismuth, the colloidal silver solutions (collargol, argyrol, electrargol, cargentos, etc.), and several preparations of silver iodid and thorium. Many of these substances, when retained in the renal pelvis, have a more or less irritating action on the kidneys, as has been demonstrated experimentally by Braasch and Mann, who injected the kidney pelves of sixty-seven dogs, and compared the effects of a variety of solutions. The results of their experiments show that the silver preparations act as foreign bodies, frequently causing multiple foci of necrosis, and that such focal necrosis may also occasionally occur when there is insufficient drainage from a kidney pelvis, even when bland fluids are used. Thorium nitrate in a 15 per cent. solution, as suggested by Burns, caused the least reaction of the various opaque mediums. This medium has been widely used in pyelography, and, until recently was considered the best one available, the greatest objections to it being the chemical difficulties in its preparation and the excessive cost. More recently Cameron has advocated the use of potassium iodid in a 25 per cent. solution, which appears to be fully as opaque to the roentgen ray as thorium; it has the advantage of being easily prepared, and is somewhat less expensive.

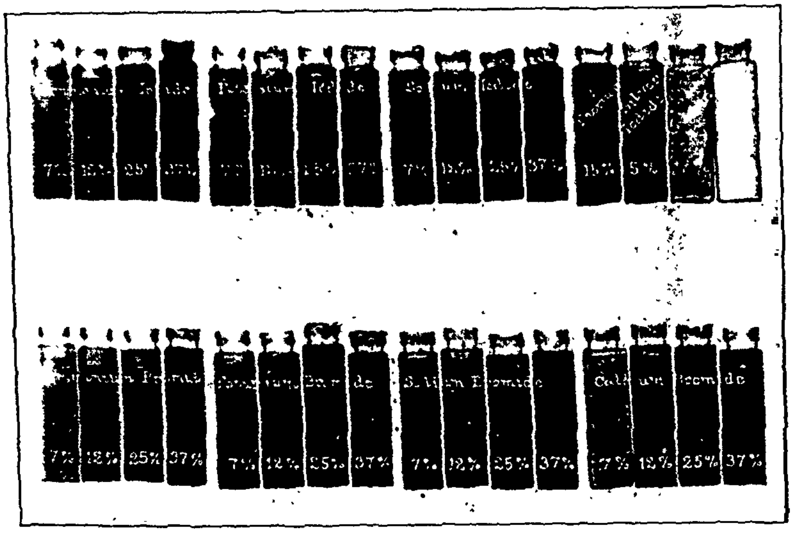

Fig. 1.—Comparison of different solutions; roentgenograms taken in 8 c.c. bottles.

The ideal medium for pyelography should be nontoxic, nonirritating and easily soluble in urine—one that is easily sterilized, that keeps well under all conditions, and is easy to procure at a reasonable cost. In experimenting with various solutions in order to determine their opacity when rayed, we found that the bromids were quite as satisfactory as any of the other solutions, and in many cases it was only necessary to use a 12.5 per cent. solution to obtain a readable pyelogram or cystogram. It would seem that the opacity of various solutions should vary as directly as their atomic weights. However, there is little or no difference in the opacity of the solutions of the same strength, whether bromids or iodids (Fig. 1). Severe reactions have been observed in several patients, when potassium iodid in 25 per cent. solutions was employed. This was evidently due to local irritation. The bromids have not appeared to be so irritating as the iodids. Bromid salts are freely soluble in urine, so that their irritating action is continually lessened by dilution with urine from the time that they are injected. They are excreted very largely by the kidneys, and no deleterious effect on the substance of the kidneys has been noted. The toxic effect that might be produced may be disregarded, because as much as 8 or 10 gm. of the salts have been given by mouth without producing any untoward symptoms, and it is unlikely that there is much absorption in the genito-urinary tract. Probably no sedative effect would be noted.

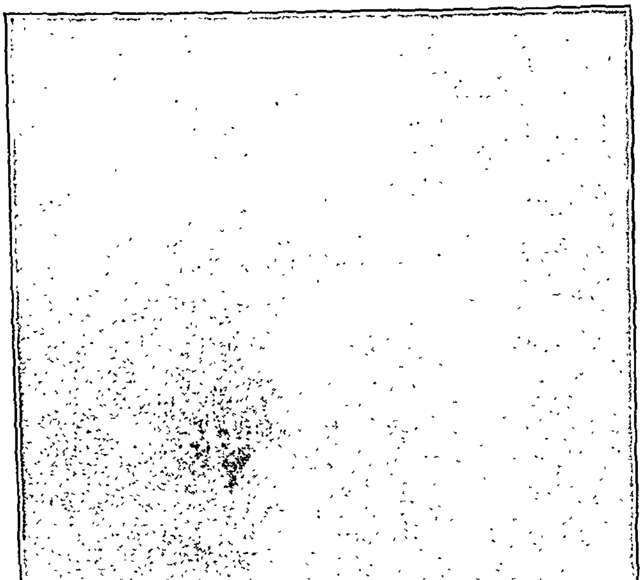

Fig. 2.—Pyelogram with 25 per cent. sodium bromid solution; slightly dilated pelvis; normal calices; lead catheter on left.

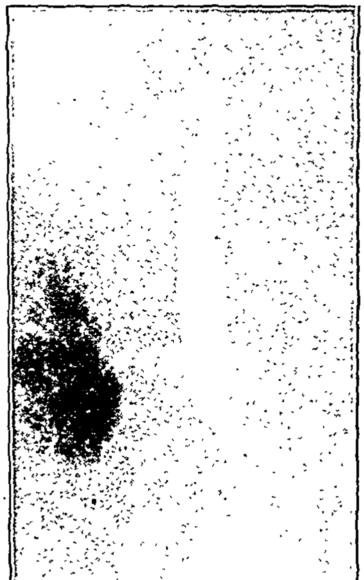

Fig. 3.—Pyelogram with similar solution; marked inflammatory dilatation of calices and ureter.

The opacity appears to be due almost entirely to the bromid radical, as it is shown that when sodium

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* From the Section of Urology, Mayo Clinic.

chlorid is used, little or no retardation of the roentgen ray is noted. Sodium bromid, apparently, smears over the surface of the ureters, minor calices of the kidneys, and small saccules of an inflammatory bladder even much better than thorium, and for this reason we believe has a distinct advantage over it. Furthermore, the drug is easily obtained, and costs only 75 cents a pound at the present time, whereas potassium iodid costs $4.90 a pound, and thorium, even in a 15 per cent. solution, largely because of the difficulty in its manufacture, costs $2.50 a pound.

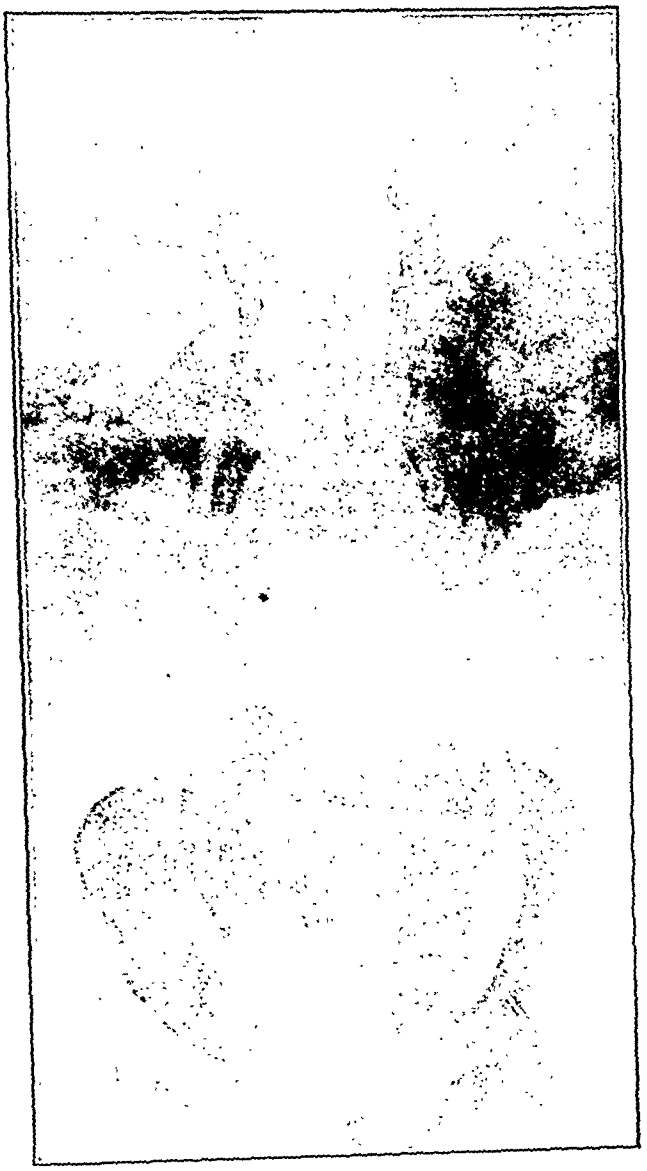

Fig. 4.—Cysto-ureteropyelogram with 25 per cent. sodium bromid solution; bilateral ascending pyelonephro-ureteritis, cystitis and distorted bladder.

We have injected 2 c.c. of 25 per cent. sodium bromid in the ureters of three dogs, in which the ureters were ligated and divided immediately after injection. Six days later, a nephrectomy was performed and a hydronephrotic sac containing approximately half an ounce of fluid was found. Macroscopic and microscopic examinations of these kidneys did not show any irritating effects from the drug. We have used a 12 per cent. solution of sodium bromid in making several cystograms on patients, and a 25 per cent. solution of sodium bromid in making several pyelograms, without noting any injurious effects (Figs. 2, 3 and 4).

Experiments are now under way for the purpose of comparing the effect of thorium, potassium iodid and sodium bromid, when they are retained in kidney pelves, and also for the purpose of studying the gradual development of hydronephrosis after the injection into the kidney pelvis of various opaque solutions. The sodium bromid is easily procured, easily sterilized, and is inexpensive. In our experience sodium bromid in a 25 per cent. solution, has offered advantages as a medium for pyelography as follows:

1. It is a bland solution and does not damage the kidney.
2. It casts a clear shadow, outlining the entire pelvis and ureter as well as, if not better than, other mediums thus far advocated.
3. It is less irritating to the pelvic and vesical mucosa than other mediums.
4. It is the least expensive, and is readily procured.
5. It is very easily prepared, and is readily sterilized by boiling.

AN EFFICIENT SUPPORT FOR SACRO-ILIAC RELAXATION *

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LOUISVILLE, KY.

The importance of sacro-iliac strain or relaxation in the production of partial invalidism has been recognized for several years. The frequency of occurrence and the persistence of pain and discomfort incident to relaxation of the sacro-iliac joint following childbirth, prolonged illness, and also from excessive pelvic strain and distortion, has necessitated the devising of a more efficient type of support than has hitherto been obtainable, that is, one which can be worn continuously and maintained in the proper position. The greatest difficulty that has beeen experienced in the use of previously devised types of support, including the various belts, braces, etc., has been the maintenance of sufficient continuous support over the sacro-iliac joint.

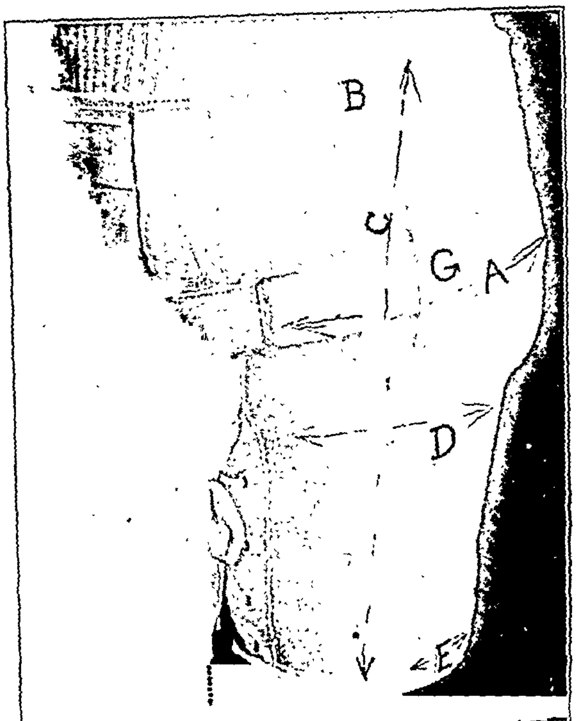

Fig. 1.—Support for sacro-iliac relaxation. Measurements in Figures 1 and 2: *A*, circumference for belt; *B*, circumference of crest; *C*, outside; *D*, circumference of thigh at gluteal fold; *E*, circumference of thigh 5 inches below; *F*, gluteal fold to top; *G*, loops.

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* Read before the Section on Orthopedic Surgery at the Sixty-Ninth Annual Session of the American Medical Association, Chicago, June, 1918.

While I claim no originality for the type of support herewith exhibited, I have never seen another just like it. However, should other identical devices be in existence, I can recommend them most highly in the treatment of sacro-iliac strain and relaxation.

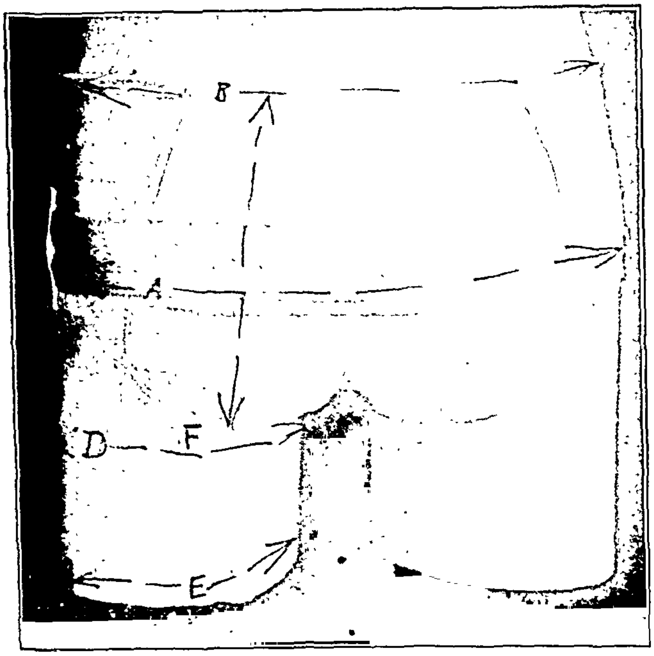

Fig. 2.—Back view of support.

To insure proper results, the device must be maintained in such a position that the lower border is on a line with the greater trochanter and the pubic arch, and at a corresponding level over the sacro-iliac joint. In other words, the support must be maintained as low as possible, and at the same time allow the patient to assume the sitting posture without discomfort. No matter how carefully applied, the ordinary belt will invariably slip upward, and where perineal straps are used to prevent this they cause so much discomfort from pressure on the perineal region that it becomes necessary to loosen them, and the supportive efficiency is thereby lost.

It has been my practice to have the apparatus made of bleached drilling doubled, the fixation skeleton resembling a pair of short pants extending from the crest of the ilium to the middle of the thighs following the gluteal fold, with a loop on each side through which passes a heavy elastic belt 1½ inches wide. The best results will be obtained by having the support fitted directly to the patient before it is completely finished. When this, however, is impossible, the device may be satisfactorily constructed by the measurements indicated in Figures 1 and 2.

I have supervised the application of this particular type of support in more than 200 cases of sacro-iliac relaxation or strain, and the symptoms have been entirely relieved excepting in two instances; but neither of these represented the classical type of sacro-iliac strain.

Case 1.—A woman, aged 35, attempted suicide by taking morphin, and then by jumping from a second story window astride a picket fence. A number of injuries were inflicted, the most serious of which were separation of the left sacro-iliac joint and separation of the pubic articulation. In this instance it was necessary to apply first a double plaster-of-Paris spica with the limbs completely extended and abducted to about 45 degrees. The sacro-iliac support was afterward applied as a convalescent splint and was thoroughly satisfactory.

Case 2.—A man, aged 25, a laborer, who claimed his sacro-iliac strain was due to heavy lifting while performing some work he was not supposed to do but which he had been ordered to execute by his employer—a rich corporation. The supportive device described was applied, and while much benefit resulted he said he could still feel a "slipping motion" of the sacro-iliac joint. Several roentgenograms were taken under attempted pelvic strain, but all the plates in all positions proved negative. The patient insisted on having a surgical operation performed, which I repeatedly refused to do. However, he was later operated on by another surgeon, both sacro-iliac joints being fixed by zigzag wires fastened to pins driven in the opposing bone. The patient claimed that this operation quickly relieved him of all symptoms. I may possibly be mistaken in this case, but it is my firm belief that a satisfactory settlement was the "treatment" most desired from the patient's point of view.

Of more than 200 patients treated for sacro-iliac strain, twenty-four came to my office on crutches.

Case 3.—One man from southern Indiana had been confined to his bed for eight weeks; he was sent to me for examination to determine if anything could be done for his relief. He was barely able to walk on crutches with the assistance of his physician and a brother. Arising from a stooped position or from a chair without help was absolutely impossible. Roentgenoscopy was negative. The pain was localized over the sacro-iliac joint and radiated downward posteriorly. The sacro-iliac support was applied and the man was able to walk immediately without the aid of crutches despite his physical weakness from having been in bed eight weeks. He returned ten days later walking without the aid of a cane or other assistance excepting the sacro-iliac support. He walked so well that I did not recognize him when he came into the office; he sat in a chair and arose several times without assistance before telling me who he was. He said that on the sixth day after application of the device he was able to "plow tobacco." The support was worn continuously day and night.

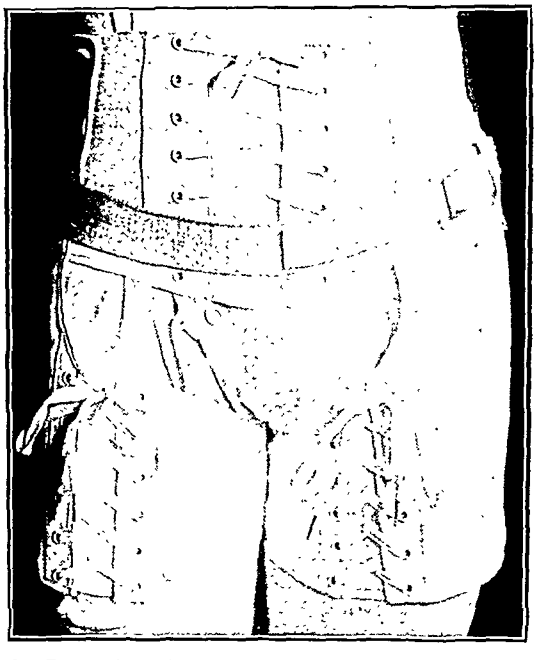

Fig. 3.—Front view of sacro-iliac support with abdominal support.

All the patients coming under my observation for the treatment of sacro-iliac relaxation or strain have been closely followed, and I am certain that the final outcome has been good in all excepting the two atypical cases mentioned.

ABSTRACT OF DISCUSSION

Dr. Fred. J. Gaenslen, Milwaukee: The author has confined his remarks to sacro-iliac relaxation and to means of supporting this joint. The belt which he has devised answers the purpose admirably, though I would suggest that it be fastened in the back to give greater security. The thigh pieces, while efficient in preventing the belt from slipping up, are not always necessary. As a rule, other and simpler means suffice.

Dr. Charles A. Parker, Chicago: Sacro-iliac strain, subluxation or relaxation, is a sort of "bogy man," and when suggested to a patient is dire in its effect on the nervous system. Perhaps there are instances of these sacro-iliac conditions, but these patients can be given a favorable prognosis. This does not, however, relieve us of responsibility for the care of lower-back troubles, and the necessity for most conscientious care in the consideration of these complaints. We must not overlook the occasional static troubles of the back. The more thoroughly we investigate the less frequently shall we have to fall back on such equivocal terms in lieu of definite pathologic entities.

In the treatment the psychology of back pain is often not sufficiently appreciated; for the alarm that goes with a pain in the back, with the ever present specter of increasing disability and final paralysis, heritage of false teaching and superstition, is enough to upset, and often does upset, an otherwise stable nervous system, when the real trouble would be considered insignificant if it occurred with equal intensity in some other supposedly less vital region. What the effect may be on an already depleted nervous system is painful to contemplate. It is in these latter individuals that the devotees of blue lights and pink bands and red lights and hot air accomplish their most wonderful cures. Patients of more stable character can be shown that with an apparently normal anatomy, with no evidence of tuberculosis, cancer or other serious conditions present, their chances for steady improvement and ultimate recovery are great. Relief by this means, while usually not so startling as that by the more spectacular method, is often very striking and is apt to be increasingly efficient. These cases must be treated by such means as their true pathology suggests.

Dr. J. P. Lord, Omaha: I agree with everything that has been said, except that I am not so much disposed to make light of the infrequency of this condition. There are cases that will continue to give you trouble until you secure other supports for the sacro-iliac joints than by putting bands about the pelvis. In the severer cases, and those failing to be relieved by ordinary supporting bands, it has been my practice to add to the pelvic metal band a support for the lower part of the chest, so as to get rid of the adverse strain produced by movements of the spine, which is so prone to disturb the sacro-iliac joint. Since I have been adding a "second story" to Osgood's apparatus I have secured a greater amount of relief.

Dr. John L. Porter, Chicago: When it comes to sacro-iliac relaxation I am the worst skeptic that ever was. In twenty years I have seen just two sacro-iliac joints that some one could demonstrate to me were relaxed sufficiently to show movement. Both were in pregnant women. I have never had any one demonstrate to me a sacro-iliac joint with motion in it in a normal individual who had not had some pathologic or physiologic process (such as pregnancy) to produce relaxation of these joints.

Dr. Ethan H. Smith, San Francisco: Within the last two years I have treated nearly three hundred cases that appeared to have relaxation of the sacro-iliac joint. I think that this term is an undeserved slander on that articulation. These cases will be found to have a tilt of the pelvis in one direction or the other, a tilt of the lumbar spine, with relaxation of the lumbar muscles on one side and a contraction of those on the opposing side. In such cases as need bolstering up I have used a modification of the corset devised by Dr. Robert W. Lovett, with a great deal of satisfaction. In the last two months I have assisted in the examination of several thousand men for the Army. In certain contingents I found that 10 per cent., and in other contingents 30 per cent., presented a pelvic tilt, with contraction of the muscles on one side and relaxation of those on the opposing side. I also found that two-thirds of those that presented this condition did not know that they had it, and had no pain. I found many of these cases among employees of the Union Iron Works, many of whom have been drafted; and in private practice I found them among saleswomen, especially those handling heavy garments in the suit and coat departments of large stores. It was also common among persons who habitually stand on one foot, and in those who habitually carry little babies on one arm. I have come to the conclusion that in those cases in which we find no pain we do not diagnose a sacro-iliac joint disturbance, while in those who have pain (and there are three times as many that are painless as those that come with pain) the condition is recognized. Dr. Owen's apparatus looks as if it were very efficient. I think that it will have a good effect on these cases, but I still disbelieve in sacro-iliac relaxation.

Dr. W. Barnett Owen, Louisville, Ky.: I expected exactly what I got; but I still maintain that when you have a patient come to you with extreme pain over the sacro-iliac joint, radiating down the thigh, and that patient has had every form of treatment from electricity to antirheumatics, with no relief, one should give him a support. Dr. Porter mentioned two cases that he had seen in which there was slipping. I only mentioned that one patient said he could feel slipping. Always roentgenographic and otherwise careful examination was made, and in every case all symptoms, except pain in the sacro-iliac region aggravated by attempted strain, were absent. It is immaterial whether you call the condition sacro-iliac relaxation or neurosis. The patient comes for relief. If a proper support will relieve him, give it to him, and select a name later. Nourishment is not kept from babies until they are named.

DERMATITIS LYCOPERSICUM ESCULENTUM (TOMATO PLANT) *

EVERETT S. LAIN, M.D.
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When certain plants are brought into proximity or actual contact with the skin of certain individuals, more or less reaction follows. The skins of some persons, however, are not appreciably inflamed even from contact with the most commonly known poisonous plants.

No writer on this subject, so far as I know, has yet attempted to enumerate or classify all such poisonous plants. Some authors do not mention more than a few of the well known plants, such as the poison ivy, the sumac, the wild rose, and the nettle, with their several offending members.

Various other names are continually being added to the list of so-called poisonous plants, namely, plants that are capable of producing a dermatitis venenata on the susceptible skin of certain persons.

ETIOLOGIC FACTORS

A plant that is capable of producing a dermatitis in certain sensitized individuals appears to be less infectious at certain seasons of the year or, in other words, at certain stages of its growth. This is due to the fact that only certain parts of the plant, such as its pollen, hairs, thistles or its expressed juices are poisonous. Botanists have asserted that climatic conditions may favor or retard the development of this poisonous element.

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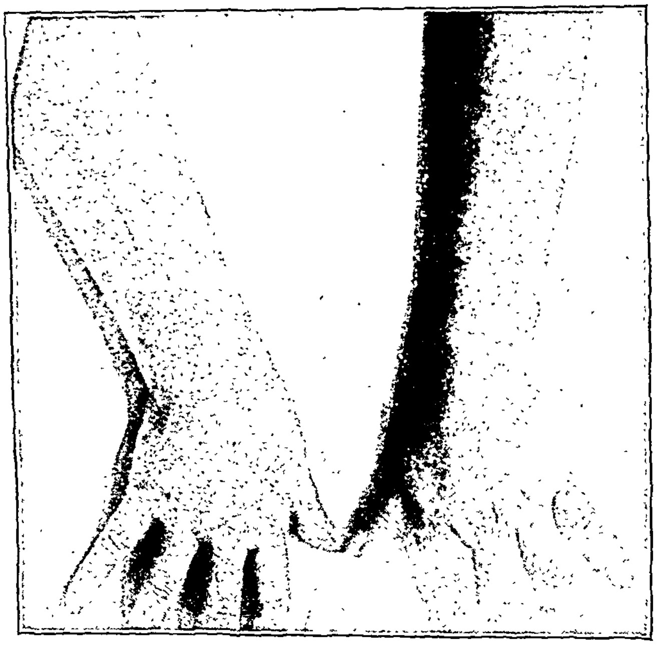
* Read before the Section on Dermatology at the Sixty-Ninth Annual Session of the Americal Medical Association, Chicago, June, 1918.

Persons who are susceptible to this form of dermatitis are spoken of as possessing an idiosyncrasy or a special sensitization for this particular plant. The fact that the same individual is not always affected when coming into contact with the same plant has been theorized on by the French school[1] as bearing a relation to the normal or perverted condition of the visceral organs. Walsh[2] states that it may be due to a temporary lack of a full supply of blood to that locality on which the dermatitis develops. American histopathologists seem more inclined to call it an anaphylactic reaction of a sensitized condition which that persons bears toward that particular chemical or protein poison.

AUTHOR'S OBSERVATIONS

Having practiced in the South, where a large variety of vegetation grows luxuriantly, I have had an opportunity to observe different herbs, plants or vines that are capable of producing this form of dermatitis. During the past several years I have frequently noticed on the hands and sometimes the faces of hucksters and gardeners a form of dermatitis for which it has been difficult to account, other than on the basis that it had been caused by some common garden vegetable.

In the summer of 1916, after having carefully noted the history and development of several of these cases, my attention was directed especially to the ordinary tomato plant, which is found in nearly every garden in its season. Since that time, I have noted several cases which seem to bear a positive relation to the gathering of tomatoes from rank and dewy-laden vines.



Dermatitis venenata in Case 1. Second attack in the same patient, each time the lesions appearing within a few hours after gathering tomatoes from rank, dewy-laden plants.

At first it seemed preposterous that the plant on which the tomato grew should be capable of doing harm even to the most sensitive of human skins. I made a brief search of textbooks and the literature on skin eruptions which might be caused by plants. I found many plants mentioned by various authors, yet I did not find a single reference to the tomato plant.

I then wrote to the reference department of the American Medical Association and received a reply that it had only one article indexed—a French abstract—that mentioned the tomato plant. I looked up the botany and classification of the tomato plant. It then occurred to me that this plant was a very probable etiologic factor in several of my cases of dermatitis venenata, which had been previously recorded as "cause unknown."

HISTORY AND CLASSIFICATION

After reviewing the history and classification of this vegetable, I find that the name "tomato" is derived from a Spanish word *tamate,* which was given this plant by the Spanish people of South America, of which countries it is a native. It is botanically known by its Latin name—*Lycopersicum esculentum.* This name, meaning "wolf peach," gives us a brief insight as to the opinion of the South Americans toward this plant, which opinion prevailed until after it was introduced into both Europe and North America. For several centuries it was considered, even by the Europeans, as a poison and was grown only as a garden ornament, which they called "love apples." Not until about the middle of the nineteenth century did this plant become generally cultivated as one of our most harmless and luscious vegetables.

The tomato plant belongs to the *Solanaceae* group and the family of nightshades. One well known member is recalled as the deadly nightshade or belladonna, meaning, "beautiful lady," relating to the practice at one time of certain Italian ladies of making their eyes beautiful by the application of certain parts of this plant. Belonging to the same family, we find the jimpson weed, the horse nettle, red pepper, and the egg plant. Some of these plants, we recall, are a most common cause for an urticaria, either from local contact or internal ingestion.

Bailey[3] states that nearly all of the *Solanaceae* group contain poisonous narcotic alkaloids or glucosids which may be converted into a certain amount of hydrocyanic acid. According to Pammel,[4] the tomato plant contains saponin among other active elements. Physiologic chemists state that saponin is a poisonous glucosid, soluble in water, and becomes a violent irritant when applied in soluble form to the mucous membranes or delicate epithelial tissues. Whether this will account for the dermatitis which this plant appears capable of producing, I am unable to say.

APPEARANCE OF THE ERUPTION

This type of dermatitis venenata that I have observed, is not materially different from that produced by many other poisonous plants, such as the so-called blood weed, or a mild degree of the *Rhus toxicodendron.* The few cases which I have noted during the past two summers have occurred on the dorsum of the hands, wrists and both surfaces of the forearms. The eruption most frequently begins as a mild stinging or itching sensation, followed in a few hours by an erythema on the surface of the skin which has been exposed. The area has no sharp lines of demarcation, such as is sometimes present in *Rhus* poisoning. On this erythema there develop miliary, discrete papules which soon become vesicular. Few of these vesicles reach the size which is observed in many other forms of dermatitis venenata. It is most frequently limited to the surfaces which have been in friction contact with the so-called hairs, and probably the bruised leaves or limbs of the plant.

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[1] White, R. P.: Occupational Affections of the Skin, 1915, New York, Paul B. Hoeber Company, p. 12.

[2] White, R. P.: Occupational Affections of the Skin, p. 13.

[3] Bailey, L. H.: Encyclopedia of Horticulture, **4**, 1931.

[4] Pammel, L. H.: Manual of Poisonous Plants, **1**, 62-63.

All of these patients gave a history of having exposed their hands and forearms among rank vines in the morning hours while the plants were yet laden with dew. This moist condition seems also to be a predisposing factor in other infectious plants. A dermatitis due to this plant is not an everyday incident, even in the practice of those in the more rural districts. Nor is it probable that the same plant is equally as infectious in every particular locality or season in which it is grown. Therefore, within two seasons I have noted less than a dozen cases bearing a positive etiology.

I will briefly report only two cases which are fairly representative of each of the others.

REPORT OF CASES

Case 1.—Mrs. C., aged 45, who had a thin, clear and tender skin, and was in good health, consulted me for an eruption on the backs of both hands and covering both forearms almost to the elbows. She had not been outside of the house except in the garden to pick tomatoes the previous morning. A prickling, itching eruption had begun within a few hours after gathering her tomatoes. At the time of my examination the eruption had the usual clinical symptoms of a mild dermatitis venenata. I made inquiry in regard to all other possible sources of infection or the application of drugs with negative results. I went out and inspected her garden. This garden presented an unusual absence of weeds of all kinds. On inspecting the tomato plants I found them large, rank, thrifty plants, with no evidence of infecting insects, such as the blister bug. I noted, however, that the limbs were bruised in places, also heavily covered with the so-called downy plant hairs.

Case 2.—Mrs. G., aged 30, who had a blond, fair, tender and well-kept skin, consulted me for an eruption on the dorsum of the hands and arms to the elbows. The eruption presented the usual and clear differential marks of a mild dermatitis venenata. I made inquiry in regard to her whereabouts the previous few days, also particularly concerning the application of any hand or skin lotions, but with negative results. On inquiry in regard to contact with plants, she said she had gathered her tomatoes on the previous morning. The eruption, or the beginning sensations, had begun late the same day. This lady also recalled having had a similar eruption the previous summer, when she had gathered her tomatoes without wearing gloves. I did not go out to inspect this garden, but learned that her garden was free of other possible infecting plants. Also, her tomato plants were considered the finest in the neighborhood.

CONCLUSIONS

I realize that I shall appear as rather premature in presenting any definite conclusions on so few cases observed. Also, it may be reasoned that, if the tomato plant is poisonous to certain individuals, it seems strikingly strange that some dermatologist has not heretofore observed and reported it.

To the first accusation, I plead guilty. To the second, I have only to say that, after seeing these few cases which have a positive etiologic history; after noting the close botanical and chemical relationship between this and other known poisonous and infectious plants; also, after having studied its branches under magnified power, I am fully convinced that the tomato plant is and has been an etiologic factor in some of my cases of dermatitis venenata.

It may be that such cases are extremely rare or that they are confined to certain soils or seasons.

Finally, it is neither my ambition nor my opinion that another new name should be added to an already well known disease—dermatitis venenata. I only trust that this report may cause other dermatologists to observe and that eventually we may learn the full possibilities for harm which may lurk in this common vegetable.

ABSTRACT OF DISCUSSION

Dr. Arthur W. Stillians, Chicago: We must thank Dr. Lain for adding another to the many known causes of dermatitis venenata. The etiology of these cases is so often difficult to determine that there must still be unknown factors, and the discoverer of one of them is a benefactor to dermatology.

Dr. Frank Waugh, Chicago: A patient I have had under observation had this trouble every fall while working in a florist's shop when chrysanthemums were in full bloom. I do not remember having heard of a dermatitis venenata due to the bloom of the chrysanthemum, which in this case proved to be the etiologic factor.

Dr. Ernest L. McEwen, Chicago: Inasmuch as this is one of the first cases reported of dermatitis due to the tomato, I think we should congratulate Dr. Lain that he does not contemplate coining a new name.

Dr. Frederick G. Harris, Chicago: I would like to ask Dr. Lain if he has eliminated the possibility of the trouble being due to some insecticide. This might well occur in picking vegetables that had been sprayed with arsenic or other solution.

Dr. David Lieberthal, Chicago: I should like to know if Dr. Lain noticed a recurrence of the dermatitis after a repetition of picking tomatoes. In that case the cause would be established.

Dr. Richard L. Sutton, Kansas City, Mo.: Dr. Lain's paper is of great interest, for it gives us a new plant dermatitis. I wish to record another new variety of industrial dermatitis, one which might be designated as "cactus dermatitis." It was first described to me by Dr. George P. Lingenfelter of Denver, and is a comparatively common disorder in the arid regions of the west. The disease develops as a result of the lesions caused by the small, splintered spicules that break off the stalks of cactus plants, and the majority of the victims are gasoline tractor drivers. The wounds, which usually are confined to the patient's arms and legs, frequently become infected and severe ulceration oftentimes ensues.

Dr. Robert G. Washburn, Milwaukee: About a year ago I had the opportunity of observing a case of dermatitis of the hands in a woman, resulting from the handling of the tomato during the process of preserving. This would seem to indicate the presence of the poison in the juices as well as in the stems of the plant and would eliminate any question of poison from insects or insecticides.

Dr. Harold N. Cole, Cleveland: I was wondering if the dermatitis resulted from the sharp spicules of the tomato vine, which are often so plentiful on these plants.

Dr. James Herbert Mitchell, Chicago: I would like to ask if transplanting the young tomato plants in the garden is likely to produce this result. Recently I have seen a number of cases of dermatitis venenata which occurred in men who were doing amateur gardening, and close questioning failed to elicit any contributory cause.

Dr. William Allen Pusey, Chicago: Dr. Lain's paper was extremely timely and I congratulate him for having given us so much information on this subject. I sympathize with him in the manifest inability to answer some of the unanswerable questions that have been put to him. Nevertheless, I have no doubt he is correct in attributing his cases to the tomato. He seems to have made out an undoubted case and to have done all that possibly could be done to establish it. The determination of the local causes of many of the cases of dermatitis that we see is a difficult matter. It requires ingenuity and much of the sort of patience that he has exhibited.

Dr. Everett S. Lain, Oklahoma City: Dr. Pusey has come to my aid and suggested the impossibility of replying to all of your questions. As regards the chrysanthemum mentioned by Dr. Waugh, if he will look up the literature on poisonous plants he will find that the chyrsanthemum belongs to the poisonous group, as do also the geranium and the nightshade. As regards eruption from insects, I examined the plants closely for the blister bug, the insect which produces eruptions most frequently in the South, but found none. Most insects which may cause a dermatitis are very well known. I found none of these on any of the plants examined. As regards a second infection, I have been observing this plant for two seasons only. In this time I have seen but one second infection. This was the lady whose photograph I have shown. As regards the infecting parts, I have suggested the hairs of the plant or possibly the glucosid, which is soluble in water; also that some friction seems necessary for the infection to take place. As regards the transplanting of tomato plants in the garden, I have never seen a case caused by such handling. I have experimented on several persons who were not, however, susceptible to the common poisonous plants, without a successful inoculation. Therefore, I am quite sure that most people are immune, or are not susceptible to infection from this plant.

THE USE AND ABUSE OF PITUITARY EXTRACT *

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No addition to the obstetric armamentarium during recent years has created so much attention and interest as the introduction of the solution of the active principles of the posterior lobe of the pituitary body, or hypophysis cerebri. Dale described its action on the uterine muscle in 1906, and later experiments by Frankl-Hochwart and Fröhlich showed that pituitary extract caused marked contraction of the uterus in pregnant animals. It was not until Blair Bell in 1909 employed these experimental results in practice that the therapeutic employment of the drug was begun. He used it in cases of postpartum hemorrhage and to reduce the bleeding in placenta praevia and cesarean section. The physiologic basis for the employment of the drug rests on the knowledge of its stimulating effect on all unstriped muscle tissues, including those of the blood vessels, intestine and bladder as well as the uterus, although it seems to have a more selective action on the latter. At first regarded with doubt, the use of the drug increased by leaps and bounds aided by the supposedly favorable results reported by many clinical observers and by the clever and often unrestricted advertising methods of its manufacturers. Most of the marketed extracts are prepared from the posterior lobe and a few from the whole gland of slaughtered cattle. Different manufacturers employed each their own device in labeling the preparation, and although at first there was believed to be little difference in the activity of these, clinical trials showed that some were more reliable than others. The term "pituitrin" came to be the most widely employed and was soon extended to include all the others notwithstanding the efforts of the competing manufacturers to limit such distinctions. Recently one of the latter firms concluded that it would be advisable to limit the application of its preparation in certain classes of cases and has developed two strengths of pituitary extract, one for general surgical use and the other intended for obstetric cases. This seems to me a confession of the necessity for adopting a more definite standard.

The literature on the use of the extract of the hypophysis is now so extensive and the drug has been so widely employed that it would appear profitable to come to some definite estimate of its value, especially as the many favorable reports about its use are counterbalanced by those of a more unfavorable character that are continually creeping into the literature on the subject. On the one hand we find enthusiasts who apparently see no limitations in the scope of its employment; on the other hand are those who find that great caution should be exercised in its use. It seems most desirable that a definite middle ground be established along which such indications can be formulated as will impress any one who is inclined to employ the drug in a given case with the necessity for a thorough knowledge and appreciation of its effects.

The hypophysis extract has now been the subject of clinical observation for a sufficient length of time to warrant such determination as to its value. Many of its enthusiastic advocates report series of cases, including in the field of application the relief of almost any condition depending on the contractile stimulation of unstriped muscle fibers. The fulsome praise of these observers has been even more pronounced and, shall we say, daring, than the fervid claims that the manufacturers of the product allowed themselves in the advertising pages of the medical journals. In this category may be placed the exaggerated and dangerous claim that "the use of the drug is remarkably free from danger even when given in enormous doses." This estimate of the value of pituitary extract was published in 1914, but fortunately the sentiment with reference to such assumed harmlessness has undergone a change, and more recent observers have modified and restricted the field of application and the indications for the use of hypophysial extracts. It was soon realized, among other things, that no satisfactory standard existed for measuring the dosage of the drug, and it seems most essential that the strength of the solution used be more or less definitely known. A "physiologically standardized preparation," labeled as such by manufacturers, is a distinction of little account because the potency of the drug in a physiologic sense probably varies with the species of animal from which the raw materials are obtained, and perhaps even with the season during which the animal was slaughtered. In this connection we may recall the fact that the thyroid gland of animals is known to be subject to such variations, and this probably applies to other endocrine structures. The blood pressure method and observations on the isolated guinea-pig uterus have been largely employed, and the official standard for the United States Pharmacopeia is by comparison with the effects of histamin, a substance isolated from ergot and due to the bacterial decomposition of histidin.

Notwithstanding that considerable work has been done with these methods, impartial investigators find much to criticize in their application and do not regard them as entirely reliable for accurate standardization. It has been shown, for example, that other organic substances stimulate the isolated uterine muscle so that the fact that pituitary extract exerts an effect on the excised uterine muscle and also on the gravid uterus may perhaps be merely a coincidence. It is known, moreover, that various oxytocic substances

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* Read before the Section on Obstetrics, Gynecology and Abdominal Surgery at the Sixty-Ninth Annual Session of the American Medical Association, Chicago, June, 1918.

react on all smooth muscle tissue, including the arteries and small veins, as well as the uterus. The action of pituitary extracts on smooth muscle thus brings about increased blood pressure and therefore points to a more satisfactory reaction than can be secured by the other methods referred to.

INDICATIONS FOR USE OF PITUITARY EXTRACT

The indications for the use of pituitary extracts in obstetric practice may be said to be fairly well established, and, employed in a conservative manner, its use should be limited to conditions of simple uterine inertia in which no obstruction to the passage of the child exists either in the cervix or in the bony pelvis. Moreover, the patient must not be in a condition of exhaustion. Its narrower field in the induction of labor with or without other means is now largely given up, and its employment to stimulate labor pains in such malpositions as occiput posterior and face presentations is likewise regarded in a doubtful light. If we accept the indications just stated, the many other recommendations fall aside and it is in this larger class of labor cases that most of the trouble results from the indiscriminate use of the drug. The bad effects vary from laceration of the cervix and perineum to complete rupture of the uterus. In addition, the possibility of postpartum hemorrhage must be guarded against, and likewise a possible asphyxiating effect on the child must be recognized.

A sufficient number of cases that demonstrate the unfavorable effects from the use of pituitary extract have now been reported in the literature, and any additions to the list are merely in the nature of confirmations. My personal experience with the drug in hospital and private practice dates back a number of years. Although somewhat apprehensive of its value, I was led to employ it, and the result of my observations failed to convince me that its use is not attended with considerable danger. This opinion is also based on the result of experiences with the drug in the hands of others in cases seen in consultation, or that were referred to the Lying-In Hospital. It seems to me a duty to disseminate knowledge tending to caution a practitioner in attendance in any given case who is about to resort, merely for the purpose of shortening a labor, to a method that recommends itself because of its apparent simplicity and yet is fraught with great danger unless employed under the strictest indications.

One or two typical examples of a considerable number of cases that have come under my personal observations will serve to explain my position with reference to the use of pituitary extract. The first is a case of fetal asphyxia:

> Mrs. P. L., admitted to the Misercordia Hospital in May, 1916, had a moderate toxemia of pregnancy for which labor was induced at term. Slow dilatation was made with bags; labor pains were ineffective; there was nonengagement of the head without pelvic contraction. Extraperitoneal cesarean section was decided on as the only satisfactory method of delivery. The house physician was directed to give 1 c.c. of pituitary extract after the abdominal incision had been made, as I had been doing in recent cases, but it was found that it had been given in error before the incision was begun. When the uterus was exposed it was found to have contracted so firmly around the head of the child that considerable force was needed to extract the head with the forceps, resulting in a tearing of the sutures and entry of the uterine contents into the general peritoneal cavity. The child was deeply asyphyxiated and failed to respond to any efforts at resuscitation.

In this instance it is fair to assume that the extreme contraction of a tonic uterus following the too early application of pituitary extract resulted in complete obstruction of the fetal circulation, as the fetal heart was quite normal before the operation was begun.

I have used pituitary extract in a number of other cases of cesarean section as an oxytocic and have been disappointed with the result. Either the uterus failed to contract promptly after the delivery of the child, or severe postpartum hemorrhage with relaxation occurred before the patient left the operating table. At the Lying-In Hospital we have ordinarily injected 40 minims of an ergot preparation in cesarean cases before operation, and I am satisfied that this is a more effective agent for the purpose, being more certain in its effects and less likely to be followed by subsequent relaxation. I have also employed the pituitary extracts in several primiparas in whom labor pains were weak; and although strengthened for a time after the use of 5 or 10 minim doses, there was not sufficient progress to warrant placing much reliance on the drug in cases of this character. One instance of fetal death which could be attributed directly to a prolonged labor and excessive use of pituitary extract occurred in a patient admitted to the Lying-In Hospital:

> The patient, a primipara, was given three successive doses of 1 c.c. each by her attendant because of apparent inertia, and on admission to the hospital was in a very much exhausted condition with the head moderately well engaged and the fetal heart not audible. The uterus was in a state of tonic contraction, and examination revealed the presence of a well-marked Bandl's ring, the cervix being almost fully dilated with the membranes ruptured. Under the circumstances a craniotomy was indicated and completed with a moderate laceration of the edematous vulvar outlet.

In this instance pituitary extract was contraindicated by the lack of sufficient engagement of the head and an already exhausted patient. The physician who attended the woman was present during the operation and, I feel, had firmly impressed on him the dangers attending the indiscriminate use of this drug.

Such instances might be multiplied by any one in active hospital service and serve to make one very doubtful of the advisability of recommending this drug to the hurried general practitioner. The shortening of labor may save time for the attendant, but it is certainly at the expense of the patient. The dilatation of the soft parts preliminary to the delivery of the child must be slow and gradually produced, and where this process is halted at any time during the labor, it should not be accelerated by the administration of a drug that often produces tumultuous contractions with rapid expulsion of the fetus and consequent extreme laceration of the soft parts. No one would think of applying the forceps to a head unengaged or with a moderately dilated cervix, and yet in reality the danger is no greater.

We can safely dismiss the contention that pituitary extract renders the forceps unnecessary. When the head is engaged and there are no other contraindications to its use, pituitary extract may stimulate the uterus sufficiently to drive the head down to a lower level; but in nine cases out of ten, the process stops at this point, and forceps are needed anyway. Moreover, a rapid extraction may be called for in advance of this time because of the effect of the more rapidly succeeding contractions on the fetal heart. The only cases in which forceps might be avoided would be those in which the fetal head is not well engaged and in which the soft parts or the pelvic brim do not interpose any obstacle to the descent; but even here we find that other means of instituting better pains are equally effective and less dangerous. As for its effectiveness in postpartum hemorrhage, I am yet to be convinced that its value is of anything more than a temporary character, giving merely an opportunity for a more reliable oxytocic like ergot to become effective. I have, however, employed it with good results in cases of incomplete abortion when curettage of the retained secundines is undertaken. In these cases the uterus contracts satisfactorily, and undue bleeding is prevented.

The foregoing remarks might lead one to regard me as a pessimist in my attitude toward pituitary extract; but I am less pessimisitic about the drug than the possibility of ever getting the profession to use it properly. I firmly believe that in a restricted class of cases, as already noted, pituitary extract is of value; but every means should be taken to combat the unfortunately indiscriminate employment of the drug. We all know the bad effects, and yet pituitary extract is being used in increasing measure. Granting that it is a valuable therapeutic addition, no one is justified in saying that it is harmless; for in every case in which it is employed, the indications must be carefully formulated before its injection. Moreover, the usually accepted dose of 1 c.c. is too large, and a trial dose of ⅓ c.c., or 5 minims, followed at intervals of an hour with one or two further doses is a preferable method of administration. If the natural forces of labor are unable to expel the child without assistance, it seems to me that their stimulation by the use of pituitary extract is not quite logical; for the resistance if present can better be overcome by forces from below than by forces from above. I make this statement advisedly because I fully admit that in the latter case, by which we mean application of the forceps, equally developed skill and judgment must prevail. The proper preliminary preparation of the patient for her labor, the avoidance of exhaustion by the administration of opiates, postural treatment and other well tried and safe procedures, together with a maximal degree of patience on the part of both mother and attendant, will do more to reduce the number of forceps deliveries or at least the difficult ones, than the means for stimulating uterine contractions depending on the indiscriminate use of hypophysial extracts. When the fetal head refuses to pass beyond the perineal floor, and caput succedaneum with a rigid, edematous outlet supervenes, why not complete the labor by a low forceps operation, which is certain in its results and completely under the control of the operator?

EMPLOYMENT IN OTHER THAN OBSTETRIC CONDITIONS

As for the use of pituitary extract in other than obstetric conditions, little need be said. It has been widely recommended for the relief of tympanites, but in several postoperative cases I found little effect from its use. Neither is it of any particular value as a substitute for the catheter. I am convinced that more cases of postoperative cystitis result from the retention of residual urine than from the proper employment of the catheter. I have had some very good results from the use of pituitary extract in cases of hemorrhage from the nonpregnant uterus, such as menorrhagia in young girls and in older women presenting small fibroids or adnexal lesions resulting in hyperemia. Here the regular administration during the flow has given excellent temporary results until other measures could be applied.

CONCLUSION

I may summarize my estimate of pituitary extract by describing it as a valuable addition to our therapeutic resources, but one which must be used with great caution, particularly in obstetric cases. Here it is safe only in cases of simple uterine inertia, particularly in multiparas, when there is no obstruction to the passage of the child, no exhaustion, and the presenting part engaged. It should be used in doses of not over 5 minims at a time, repeated only when the effect of the previous dose has worn off. For the induction of labor, or as an accepted substitute for the forceps, it would be best not to consider pituitary extract. Properly used under proper indications, the extract of the hypophysis has a distinct place and value. Indiscriminate and improper use will only tend to relegate a good therapeutic medium to the discard.

23 East Ninety-Third Street.

ABSTRACT OF DISCUSSION

Dr. J. B. DeLee, Chicago: I was one of the first to oppose the use of pituitary extract in labor. Further experience of my own and watching the work of others has confirmed the opinion I expressed many years ago, and has also increased my desire to emphasize the importance of the general practitioner's avoiding the use of pituitary extract in his labor cases. Pituitary extract is like a scalpel; good results are obtained with the scalpel, bad ones, too; but pituitary extract is worse than the scalpel; it is like one of those double-edged bistouries—it cuts both ways, and sometimes in the direction least desired. L. G. McNeile collected sixteen cases of rupture of the uterus from pituitary extract. I know of four others. All happened in the city of Chicago and have not been published. Laceration of the cervix is a complication the importance of which is being recognized more and more. It is nearly always caused if pituitary extract is used before the cervix is dilated. Lacerations of the perineum have always been given a great deal of dignity. They, too, are increased by the use of pituitary extract. Pituitary extract is used so indiscriminately by the medical profession that something ought to be done other than the modest complaints and warnings issued in journals. The subject of the endocrinal relations is still theoretical, but I think clinical experience will give many instances that will prove disturbances of the action of the glands of internal secretion of the fetus. Many children are born dead with the symptoms of asphyxia after the administration of pituitary extract, and the death can hardly be explained by an asphyxia caused by the contraction of the uterus produced by pituitary extract. I used to give pituitary extract before cesarean section, but now give it after the child has left the uterus. I also lived through an experience of spasmodic contraction of the uterus during cesarean section, rendering delivery of the child very difficult. In cesarean section, I give pituitary extract as soon as the child has been extracted from the uterus. I inject one ampule of pituitary extract into the deltoid muscle. I think it makes little difference whose extract is used. If the uterus does not contract promptly, it is also injected with one ampule in two or three spots. I do not give pituitary extract in cesarean section cases after the sutures have been put in. In my opinion, some of the cases of peritonitis following cesarean section and some cases of hemorrhage following cesarean section are due to the use of pituitary extract after the uterus has been sutured. We do not use pituitary extract to produce intestinal action after cesarean sections. I have used a great deal of pituitary extract to stimulate the bladder to spontaneous urination with no results. Pituitary extract seems to have a hemostatic effect besides its effect on the uterus. I have used it occasionally in the hemorrhages of the new-born without success. There are cases of *primary inertia* of the uterus. In these cases, with or without rupture of the bag of waters, pituitary extract will do good; but remember that it is a two-edged knife. When I use it I study the indications with special care; the pelvis for contraction, the cervix for unusual rigidity, the child for abnormal position. A careful investigation of all the attending circumstances is required to enable one to make a proper diagnosis and to place the indication for pituitary extract. The greatest care must be exercised, and I give the extract myself. I have a can of ether at hand for immediate use when indicated. The reason for such extraordinary care was my experience in a case of occipitoposterior position and inertia of the uterus lasting nearly three days, with rise of temperature, showing that the patient was beginning to suffer from infection, in which case it was very desirable to empty the uterus without vaginal examination and without the use of instruments or bags. Three drops of pituitary extract were administered, and produced such a tetanic contraction of the uterus that the woman almost went wild with pain until I could anesthetize her. This woman had an idiosyncrasy to the pituitary extract. Pituitary extract is occasionally useful when, having changed a face to an occipital presentation, strong pains are needed to force the occiput down on the perineum. In puerperal infection, where there are clots or pieces of placenta in utero, pituitary extract may also be useful. In the last sixteen cases which I have delivered, which required the use of forceps and in which I anticipated postpartum hemorrhage, I have given an ampule of pituitary extract immediately after the baby was born and ergot as soon as the placenta was out. Previously, my practice had been to clean out the placenta by hand and pack the uterus. That is a little bit risky for the general practitioner. I have thus found it possible to avoid the use of gauze. Of the sixteen cases I had to pack only one.

Dr. J. L. Bubis, Cleveland: During the last six years I have never given more than from 1 to 3 minims of pituitary extract during childbirth. With this dose given intramuscularly into the biceps in any stage of labor, my results have been most satisfactory. The 1 to 3 minim dose stimulates the uterine pains when very often a larger dose would be very dangerous to both mother and child. In postpartum hemorrhage there is no drug that will act so quickly. The danger of relaxation after severe contraction may be overcome by ergot. As a galactagogue pituitary extract has not been satisfactory.

In cases of retention of urine, it has been used with varying success. I have had better results from the introduction of one-half ounce of glycerin into the bladder. This has done away with probably 95 per cent. of catheterization in obstetric and surgical cases. In the removal of retained secundines I have used 1 c.c. of pituitary extract intramuscularly. By the time the uterus is cleaned out with the placental forceps, finger or curet, the pituitary extract has so contracted it that there is practically no bleeding and the uterus remains firm. Hot irrigations and packings are not necessary. At the end of the second stage of labor, pituitary extract is also effectual. We generally use gas anesthesia. Very often, just as the head reaches the perineum, the patient is placed under gas anesthesia and the labor pains cease. With the injection of 1 or 2 minims of pituitary extract the labor pains immediately recur.

Dr. Jennings C. Litzenberg, Minneapolis: In 1914 I sounded a warning against the promiscuous use of pituitary extract. My warnings were based on the observation of a relatively small number of cases, but it seemed to me that there was much danger of rupture of the uterus. Another indication, one which has not been mentioned by the essayist or in the discussion, is that of hemorrhage in the brain of the fetus, which we have seen in cases in which labor was entirely normal in every way except that pituitary extract was given at the end, when labor had nearly stopped, with the head on the perineum. The baby, alive at the time the pituitary extract was given, was born dead in a short time, and the postmortem showed hemorrhage of the brain. This paper is certainly timely for its warning against the promiscuous use of pituitary extract. I hope it will have the effect that no one will ever give an ampule of pituitary extract before the baby is born, but only very small doses before delivery; also, that it shall never be given, except in the most exceptional circumstances, before the cervix is fully dilated, and even after that with the greatest care and with ample preparations for complications.

Dr. C. S. Bacon, Chicago: One phase of this subject which has not been alluded to is the medicolegal question. I have seen a number of cases in which this phase of the problem was encountered. I know of one case in which a practitioner was blamed because he did not use pituitary extract in place of doing a forceps operation which resulted unfortunately. In a case in which pituitary extract is used and the baby born dead, or where there are serious lacerations of either the cervix or perineum or of the pelvic outlet, there is a greater legal risk. This feature should be considered carefully. The initial dose of pituitary extract should always be small. For some years I have not ventured to give more than from 3 to 5 minims of the extract as the beginning dose. When, however, a patient does not react to this dose, I do not hesitate to give more, but under exceedingly careful observation of the case.

Dr. W. P. Manton, Detroit: I have tried out pituitary extract in a limited number of cases and my findings agree practically with Dr. Kosmak's experience. The period of rehabilitation of which Dr. Litzenberg speaks is one of special importance for the general practitioner, and will probably never arrive.

AVOIDABLE TRAUMATIC ABDOMEN *

JOHN B. DEAVER, M.D.

PHILADELPHIA

At this time when so much unavoidable injury is occupying the attention of the surgical world, the surgeon in civilian practice is more than ever shocked on being confronted with traumatism that could be avoided. This was forcibly brought home to me recently while operating for symptoms of a severe abdominal lesion:

> A colored woman, aged 49, had been operated on twelve years previously (operator unknown) for a tumor of the uterus, abscess and appendicitis. After two months at the hospital, she had been dismissed in good condition and had remained perfectly well until her present illness, which had set in with severe abdominal pain six days prior to her coming to the hospital.
>
> I was not a little astounded to find the trouble to have been caused by a pair of hemostatic forceps 8 inches long, one half of which was found in the sigmoid and the other half in the lower ileum which it had perforated, producing a spontaneous ileosigmoidostomy. The instrument was removed and the bowel closed; it was corroded but not covered with a membrane. The entire lower abdomen, the site of a purulent peritonitis, was tied up with adhesions, some of which it was deemed best not to attempt to separate. The patient made an uneventful recovery and was discharged in good condition one month after operation.

The case appears unique, both for the length of time the foreign body had been within the abdominal cavity without causing any trouble and for the unaccountable manner in which the instrument had separated and found lodgment in different parts of the bowel.

CAUSES AND EFFECTS OF OPERATIVE OVERSIGHT

Numerous systems and devices have been suggested to avoid this accident, but they are usually more or less cumbersome and often fail of the very purpose for which they are designed. In the last analysis, the proper organization of the operating room is the vital factor in preventing this mishap. The essentials are absolute quiet, a permanent staff of well trained, reliable assistants, each assigned to a particular task, whose conscientious and concentrated attention to this task and unremitting persistence in tracing any piece of gauze or instrument that may be missing is second only to the vigilance of the operator himself. Those of us who are fortunate enough to have at our command such a staff are also fortunate enough not to have such an oversight on record.

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* Read before the Section on Obstetrics, Gynecology and Abdominal Surgery at the Sixty-Ninth Annual Session of the American Medical Association, Chicago, June, 1918.

Some surgeons, who with commendable frankness have published their sins in leaving a foreign body within the abdomen during operation, have offered extenuating circumstances to explain the misfortune, such as unusually difficult and prolonged operation with threatened collapse of the patient and necessarily hurried termination of the operation in order to save life. The oversight would be possible in such circumstances, especially if the operator was young, but it is here where the training of his staff proves of inestimable worth.

The possible dire results of the occurrence are threefold: death, prolonged suffering and often abscess formation, usually with recovery, and not infrequently a lawsuit, which, no matter how it terminates, means an irretrievable loss of time and of reputation to the surgeon.

Fortunately, a beneficent provision of nature enables the peritoneal cavity to protect itself from the evil effects of a foreign body in its midst, and its presence is often one of the surprises of the postmortem table. In a great many instances, too, the forgotten object is passed spontaneously through the rectum and sometimes it is recovered through an abscess or a sinus. But more often it entails a secondary operation immediately after the primary one, or, as in our case, at some more or less remote period afterward. The outcome is not always so fortunate, for death as the result of the presence of the foreign body and its attendant complications is the result in more than one fourth of the reported cases.

PERFORATION OF THE UTERUS

This type of avoidable traumatism suggests another type which is perhaps less pardonable than the foregoing and which is attended with equally unpleasant possibilities. I refer to perforation of the uterus. The avoidance of this accident is entirely a matter of instruction and technic. The frequency with which it is still reported (and it is probably not reported as often as it occurs) would seem to indicate that curettement is still considered an easy and simple operation which every beginner may safely undertake. The fact of the matter is that it is a serious operation and that only the experienced surgeon is able to recognize when a false passage has been made and can at once proceed to correct it. The tyro in surgery usually does not know what he has done or realizes it only when to his horror he finds that what he is drawing out is not membrane but intestine. In other words, the expert immediately knows when he is encountering unusual conditions, such as soft uterine tissue, which offers no resistance to any instrument, or abnormal anatomic relations, such as retroflexion; and he acts accordingly. In the event of perforation, prompt action usually prevents any untoward result and recovery takes place. But should the accident happen to one who is not experienced, death is the more common result, due often to imperfect aseptic precautions and lack of training or lack of proper facilities to do an abdominal section to repair the injury.

One way of avoiding the accident is by careful preliminary estimation of the position, mobility, consistency, and, if possible, contractility of the uterus, and by noting the presence of obstruction, such as tumors, and the condition of the adnexa. Another way is to use nature's best curet, the fingers of the experienced surgeon. Should an instrument be required, it should be a dull one, preferably placental forceps. The dull curet may, but the sharp one does do harm. The former removes epithelium but the latter removes mucosa as well, which leads to a permanent loss of substance, for repair in such an event takes place by the formation of connective tissue and produces a focus of reduced resistance and a predisposition to rupture.

It is also well to remember that perforation of the uterus has resulted in some instances from the injection of caustic solutions, such as chlorid of iron or of zinc, tincture of iodin, etc. In the special cases in which such solutions are found necessary, they should be applied with a swab.

RUPTURE OF THE UTERUS

In the list of avoidable abdominal traumatisms, we must also include rupture of the uterus with its shockingly high maternal and fetal mortality. While it is possible that a percentage of the complete traumatic ruptures produced by operation have been preceded by a slight degree of spontaneous rupture of the uterus, there is sufficient evidence to show that by far the greater number of cases are actually traumatic, the direct result of inexperience and ignorance, of failure to recognize that rupture is threatening or at least to recognize that things are not as they should be, of faulty manipulation, hasty instrumentation, and, in not a few instances, of the administration of pituitary solution.

The only hope of improving the dark prognosis of this very serious condition is abdominal section at the first sign of spontaneous rupture. Any other procedure, such as drawing the fetus through the rupture and delivery in the natural way runs the risk of additional injury and of infection and is also contrary to the principles of good surgery which abhors work in the dark, but prefers the light by which it may see well what is to be done and do well what is to be done.

In a few exceptional cases, when the rupture is in the lower uterine segment, packing the uterus and the pelvic cavity with gauze has given good results, but when the rupture is anterior or lateral and when there is marked hemorrhage and the placenta or the fetus has escaped into the abdominal cavity, abdominal section is imperative and most likely a hysterectomy will be required. The safest course in all ruptures is operation.

The advantage of abdominal section is the opportunity it presents of complete cleansing of the operation area, control of hemorrhage, examination and proper treatment of the collapsed intestine, and the possibility of conservative treatment of the ruptured organ. Supravaginal amputation which is advocated by some surgeons, it is true, preserves the pelvic floor intact and permits menstruation, but it removes the sound and noninfected corpus and allows the lacerated cervix to remain. For this reason, total extirpation is better when the vaginal portion is torn and requires suture.

The best thing, however, is to do everything possible to avoid the accident by careful study of conditions—the comparative size of the fetus and the pelvis and the degree of expulsive power. The ability to recognize impending rupture, and prompt action to resist it are greatly needed.

USE OF NITROUS OXID GAS

A few words with regard to nitrous oxid gas and nitrous oxid and oxygen anesthesia in surgical and obstetric work may not be out of place in this connection.

While I have found this form of narcosis useful in short operations, especially appendectomy in chronic appendicitis, I should not be inclined to advocate it for more extensive and prolonged work. Its great disadvantage seems to me to be that it does not give complete anesthesia, and thus it prevents that perfect relaxation of the patient and at the same time that perfect control by the surgeon, who should be monarch of all he surveys. The amount of gas to be given is also difficult to determine even after extended practice in its administration, and the surgeon's attention is apt to have to be divided between the state of his patient and the work he is doing, at least more so than with ether anesthesia in the hands of a competent anesthetist.

Conservation, the watchword in civilian life today, has ever been the watchword of medicine. It behooves us at this time more than ever, by precept and by example, to leave nothing undone that will avoid unnecessary suffering and unnecessary risk to life, also unnecessary drain on our much depleted hospital and teaching staffs, to say nothing of the drain on the purse of the patients. It is for these reasons that I have chosen to sound this warning note at this time.

ABSTRACT OF DISCUSSION

Dr. Stephen E. Tracy, Philadelphia: Two or three years ago a patient came under my observation complaining of symptoms from a mass in the middle zone left side of the abdomen. The patient was studied carefully and finally a diagnosis of malignancy of the colon was made. At operation a block dissection was made; over half of the transverse and nearly all of the descending colon was removed. There was an opening between the mass and the lumen of the colon through which a piece of gauze protruded. The cavity when open revealed a considerable quantity of pus and a gauze pad. The patient had had a hysterectomy seventeen years before. She had had no symptoms from the gauze until about six months before she came under our observation.

Dr. Peter B. Salatich, New Orleans: Some time ago a man told me that he had resected 3 feet of bowel and the woman got well. It was learned that he had curetted the womb for abortion. He curetted and curetted and did not recognize the condition until the bowel was hanging out of the vagina. He had taken out 3 feet of bowel and boasted of what a wonderful operation he had performed.

Dr. Emil Novak, Baltimore: I saw a case of perforation of the genital tract which was rather striking in that severe injury to the intestine was caused by the patient herself. The patient was brought to the hospital, apparently moribund. A few days before, thinking she was pregnant, she had introduced a rough splinter of wood into the vagina, directing it upward in the general direction of the uterus. A few hours later she had a desire to defecate. During the straining she felt something come out between her limbs. She did not know what it was, but, nevertheless, she took a pair of scissors and cut it off. It proved to be a loop of her own intestine. Dr. Deaver has done a service to gynecology in emphasizing the dangers of curettage, usually considered a very simple operation. Nevertheless, the dangers of operation are not nearly so great as Dr. Deaver has painted them—certainly not great enough to justify the routine performance of transperitoneal hysterotomy. While the danger of perforation of the uterus is a real one, the accident should not be of very frequent occurrence if the operation is done with the proper care. As a rule, the uterus is perforated on the instroke of the curet. I have often seen men, in using a curet, grasp it as if it were a poker, thrusting it forcibly into the fundus. The instrument should be allowed to slide up toward the fundus practically by its own weight. The outward stroke can be made much more briskly, for there is little danger of perforating the uterus during this step of the procedure.

Dr. Deaver's allusion to the subject of rupture of the uterus interested me, especially because of a recent personal experience. In this case the rupture followed a previous cesarean section, and was noteworthy because of the absence of the shock and hemorrhage usually observed in uterine rupture. I saw the woman in consultation six weeks after the expected date of confinement. At the latter time she had had a spurious labor which had left her with a moderate amount of abdominal soreness. The woman had, however, been walking about the hospital and feeling fairly comfortable up to the time I saw her. In view of the absence of a presenting part or fetal heart sounds, rupture of the uterus, with extrusion of the fetus into the abdominal cavity, was diagnosed. At operation a large macerated fetus was removed from the abdominal cavity, the ruptured uterus having undergone involution and having again become a pelvic organ. Rupture of the uterus had apparently been attended with no hemorrhage, probably on account of the tamponlike action of the fetal head as it was extruded through the uterine wound.

Dr. A. E. Walker, Anthony, Kan.: I was called to curet a woman from whom a young physician had removed 40 inches of bowel. I opened the abdomen and found two perforations in the anterior wall. The uterus was retroflexed, making perforation quite easy.

Dr. A. P. Butt, Davis, W. Va.: I do not think the impression ought to be allowed to go out that these are all avoidable accidents. We are not all surrounded with the appointments which Dr. Deaver has in his operations, and these accidents are bound to occur. Those of us who attended Dr. Murphy's clinics remember how sponges were counted and foreign bodies explored for. He always did that, and I presume Dr. Murphy had some reason for so doing.

Dr. John B. Deaver, Philadelphia: I am much obliged to the gentlemen for discussing my paper. After years of experience in removing foreign bodies, this instance in which the forceps were found, after having separated and perforated the bowel, was unique.

Progress in China.—The usual missionary program, with its threefold emphasis on education, medicine and religious teaching, is in China the agent of reconstructing whole communities and of creating a new type of life. In hundreds of cities and villages today these effects are evident: an increase of general intelligence; a greater capacity on the part of young men and women to support themselves well, due to the training obtained in church and school; a decrease of prevalent diseases; cleaner and more beautiful homes; a new appreciation of the dignity of womanhood; a deeper interest on the part of the community in the welfare of the defectives and of the poor; the breaking down of fixed and hardened social customs and a greater ambition and zest to life on the part of young men and women; a new spirit of unity and cooperation in the Christian community; the breaking down of the bondage of demonology and a release of high spiritual hopes and aspirations. While all these effects are not evident in every community, they are the obvious effects of Christian missions in China.—J. S. Burgess, the *Survey*.

TREATMENT OF PREMATURITY*

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It is my purpose to present in this paper the method and the results of the treatment of premature infants in the University of Minnesota Hospital. The material studied includes sixty prematurely born infants, all being born at, or otherwise admitted to, the clinic from September, 1914, when the department of pediatrics assumed charge of the new-born infants' clinic, until the close of 1917.

It is noteworthy that Litzenberg's[1] report of the efficacy of the four-hour feeding interval for premature infants, the first report in American literature, came from the obstetric service of the same hospital. As Litzenberg states, he was led to adopt the long interval by observing its success in a premature baby that vomited whenever a shorter interval was tried. No less an authority than Czerny had previously recommended that the premature baby be given no more than six feedings in the twenty-four hours. Since Litzenberg's paper, another by Grulee[2] has appeared reporting success with, and advocating the use of, the four-hour feeding interval, stating that it tends to prevent overfeeding, to avoid vomiting, a serious complication, and to avoid disturbing the infant.

Our experience supports Grulee's summing up, and we see only one disadvantage of major importance inherent in the practice of four-hour feeding. This is that in certain homes where insufficient effort is made thoroughly to empty the breasts, they will be inadequately stimulated and the milk supply will suffer correspondingly.

The babies in this series were fed breast milk on the four-hour interval, with a few exceptions in the second month, no other food was used. Many of them were tube-fed for varying lengths of time, a procedure first employed by Tarnier,[3] and later advocated by Rott[4] and by Langstein.[5] The tube, a small, soft rubber catheter attached to a glass funnel, was passed by mouth and inserted about 15 cm. No injury to the babies ever resulted. The tube feeding was continued until the babies were able to nurse or take the bottle successfully. The smaller babies, weighing 2,000 gm. and less, accomplished this, on the average, at the end of the first month. Only one required two months before being able to take the breast. Two thirds of the infants with a birth weight of more than 2,000 gm. took the breast successfully in the first week. Only three needed to be tube-fed in the third week.

Table 1 shows the birth weights of the babies who survived and the day on which they began to take considerable nourishment directly from the breast. Nearly half these babies, however, required complemental feedings for a week or two longer, that is, they were weighed before and after nursing, and the deficiency was made up by tube or bottle. The breast supply of the mothers was kept up by manual expression or pumping, many of them sending their milk in twice a day by messenger.

Feeding, as a rule, was begun on the second day, the initial amounts being usually from 15 to 30 gm. six times in twenty-four hours. Oberwarth,[6] Birk[7] and Ladd[8] have found the daily caloric need of the premature infant to be slightly in excess of 100 calories per kilogram. Salge[9] and Budin[10] place the amount about 50 per cent. higher, while Czerny and Keller give figures that lie between the two. According to Birk, after the tenth day, the premature baby needs about one seventh of his body weight in breast milk daily. It would seem—and this was our experience—that no average applies to the individual baby. The chief factor to be considered is that the baby's tolerance for food must not be overstepped. Vomiting (other than an occasional slight regurgitation when the tube is withdrawn) seems to be the first danger signal, and on numerous occasions the baby's *ration* was temporarily reduced when this appeared. Certainly one should not wait for other evidences of overfeeding, such as diarrhea or irregular temperature.

TABLE 1.—BIRTH WEIGHT, CONTROL OF TEMPERATURE AND DATE OF FIRST SUCCESSFUL NURSING IN SURVIVING INFANTS

Case Number	Birth Weight, Gm.	Day on Which Temperature Was First Controlled	Day of First Successful Nursing
8840	1,505	28	32
8075	1,540	33	48
10577	1,640	30	42
8074	1,670	28	71
10298	1,710	28	21
11744	1,800	—	34
12619	1,800	14	10
11112	1,870	37	19
11457	1,925	21	12
11621	1,930	10	26
9828	1,940	72	67
12490	1,960	—	18
7570	1,965	15	6
6526	2,000	21	34
7092	2,000	8	30
7903	2,050	8	28
12571	2,060	22	12
8073	2,120	29	25
8347	2,135	13	1
11665	2,190	8	10
9165	2,200	17	10
10235	2,250	—	2
9267	2,300	1	4
12576	2,300	—	6
9703	2,370	18	15
8590	2,390	—	3
11220	2,400	3	4
7427	2,440	—	5
9629	2,449	24	5
10926	2,450	—	4
9811	2,455	5	2
8731	2,480	—	2
7870	2,595	3	6
11883	2,600	—	9
7456	2,815	12	4
7514	2,860	3	3

ADJUSTMENT OF TEMPERATURE

Incubators were not used. Instead, the babies, clad in flannel hoods and capes, were kept in blanket-lined clothes baskets containing hot water bottles. The bed temperatures were charted along with that of the baby, and held at between 85 and 90 F. Genersich[11] gives this as the optimal temperature for the premature infant's bed. None of our babies that were unable to

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[*] From the Department of Pediatrics of the University of Minnesota, Dr. J. P. Sedgwick, professor and chief of the department.

[*] Read before the Section on Diseases of Children at the Sixty-Ninth Annual Session of the American Medical Association, Chicago, June, 1918.

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2. Grulee, C. G.: Care and Feeding of Incubator Babies, Surg., Gynec. and Obst., 1915, **20**, 234-239.
3. Tarnier, quoted by Budin, P.: The Nursling, London, 1907, p. 28.
4. Rott: Zur Ernährungstechnik frühgeborener Säuglinge, Ztschr. f. Kinderh., 1912, **5**, 134-174.
5. Langstein, L.: Ernährung und Wachstum der Frühgeborenen, Berl. klin. Wchnschr., 1915, **3**, 631-634.
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9. Salge: Einführung in die moderne Kinderheilkunde, Berlin, 1909.
10. Budin, P.: The Nursling, London, 1907, p. 6.
11. Genersich: Der Einfluss der Wärme auf die Temperatur der Säuglinge, Monatschr. f. Kinderh., 1910, **9**, 183-199.

maintain a normal body temperature with a bed temperature of 90 were able to do so when the bed temperature was higher. Our charts show that when the baby can maintain a normal monothermia with the aid of hot water bottles, the temperature will remain between 98 and 99 F. without them.

The bed temperatures were taken and charted after artificial heat was discontinued, and in babies that were controlling their body temperatures the bed temperatures were uniformly between 85 and 90 F. The temperatures of the bed of another premature baby, whose own body temperature remained between 97 and 98 F., was constantly in the neighborhood of 80.

Fifteen of the babies who survived had birth weights of 2 kg. or less. On the average, they were able to control their body heat by the twenty-seventh day. Only three required hot water bottles longer than a month. One, however, needed artificial heat until he was 72 days old. None of the premature babies with a birth weight of more than 2,000 gm. required artificial heat after the first month. Twenty-one of these survived and only three needed it in the fourth week. Table 1 shows the day on which the infants began to maintain their body temperature without artificial heat.

The babies were bathed with olive oil and wiped dry with warm flannel. An aseptic nursing technic was followed, nurses and doctors washing their hands before and after contact with the infants, and wearing gauze masks if suffering with any respiratory infection, however mild. The mothers of premature infants were carefully watched, and at the first sign of coryza were made to wear masks while nursing their babies.

STATISTICS OF MORTALITY FOR SURVIVORS AND NONSURVIVORS

Of the sixty premature infants, thirty-six lived and twenty-four died, giving a gross mortality of 40 per cent. Fourteen deaths, however, or 58 per cent. of the total number of deaths, occurred on the first day. Necropsies were done on twelve of the fourteen babies, and in five instances definite and adequate causes for death were found. There was extensive visceral syphilis in two cases, anencephalus in one, intraventricular hemorrhage in one, and a fractured dorsal vertebra with a lacerated spinal cord in one. Two died on the second day, one on the third, one on the fifth, and one on the sixth, all with cyanosis and a gradual decline in body temperature. One infant survived until the eighth day and another until the thirteenth day, both showing throughout a slowly falling temperature. Necropsies were done in five of the seven cases without a satisfactory cause of death being found. Of the remaining thirty-nine babies, one with syphilis died on the twenty-fifth day of hemorrhage from the stomach, and one died on the forty-second day because his tolerance for breast milk had been overstepped. This baby apparently had taken his food well and was making a satisfactory gain in weight; but the food was increased too rapidly, the warning signal of vomiting was disregarded, diarrhea and eczema developed, and thereafter a quantity of nourishment great enough to maintain life could not be tolerated. The only other death occurred on the fifty-first day in a baby that contracted rhinitis from some careless attendant; the temperature became irregular, the tolerance for food was lost and death ensued. The last two babies were born of mothers each of whom had an open pulmonary tuberculosis. No tuberculosis was found at the necropsies of the infants, but, as Reiche[12] has pointed out, maternal tuberculosis exerts a harmful influence on the premature infant, even when the latter does not suffer from the disease.

TABLE 2.—RECORDS OF PREMATURE INFANTS SURVIVING SIX DAYS

Case Number	Birth Weight, Gm.	Day of Death	Probable Cause of Failure	Pathology
11134	975	8	Gradual decline in body temperature	No necropsy
8385	1,450	13	Gradual decline in body temperature	Necropsy negative
7910	1,500	6	Gradual decline in body temperature	Necropsy negative
7205	1,675	51	Parenteral infection. Mother had open pulmonary tuberculosis	Necropsy negative
9097	1,825	43	Overfeeding with breast milk. Babe's tolerance exceeded, vomiting. Diarrhea, eczema. Mother had tuberculosis	Necropsy negative
10168	2,180	25	Hematemesis. Syphilis.....	No necropsy

TABLE 3.—RECORDS OF PREMATURE INFANTS SURVIVING LESS THAN SIX DAYS

Case Number	Weight, Gm.	Day of Death	Pathology
7457	.....	1	No necropsy
12900	.....	1	No necropsy
7996	.....	1	No necropsy
868	.....	1	Necropsy negative
7771	630	1	No necropsy
10101	660	1	Necropsy negative
12895	700	1	Necropsy negative
6002	1,060	3	Necropsy negative
11208	1,185	1	Hemorrhage into left lateral ventricle
70	1,210	1	Anencephalus. Pulmonary hemorrhage
303	1,250	5	Necropsy negative
3	1,470	1	Necropsy negative
11439	1,570	1	Necropsy negative
8617	1,885	1	Fracture fifth dorsal vertebra, laceration of spinal cord
34	1,900	1	Syphilis
35	1,910	1	Syphilis
11490	2,200	2	No necropsy
958	2,220	2	Necropsy negative

Budin pointed out the great importance of initial chilling in producing the death of the premature infant. This most frequently occurs when the baby is born outside the hospital. Consequently, while our mortality rate is much increased by the fourteen infants who were born there and died on the first day, it suffered very little from the deaths of infants who were brought in from outside to die later. Only one such death occurred.

Table 2 shows the birth weight, the age at death and its cause in the six infants who survived longer than five days. Similar data concerning the eighteen infants who died in the first five days is contained in Table 3. It is a question as to how many of these babies were viable.

PROGRESS OF SURVIVING INFANTS

A summary of the more important information gleaned from the records of the surviving babies is presented in Table 4. It shows the progress of each baby, the ability to control temperature, to nurse, and to gain in weight. The age figures are given in days, the weights in grams. The + signs in the tenth column signify that complemental feeding was still necessary at the time of discharge, those in the eleventh, that the baby was nursing well at discharge, and those in the twelfth that at that time he was gaining satisfactorily.

The parallelism between the ability fully to control body temperature and to gain satisfactorily in weight is noted. Six of the nine babies that were discharged before they were able to maintain a normal monothermia were not yet making a good gain. Because of the advantage of keeping the baby with its mother, all infants were discharged as soon as it seemed safe to discharge them. All but two babies, however, were either nursing well or gaining satisfactorily at the time of leaving the hospital. Only three infants remained in the hospital longer than two months, and two of these developed marked pallor and craniotabes in the third month. As has been pointed out by Rosenstern[13] and others, the so-called pseudorickets uniformly occurs at this period of premature life. These babies were given iron and cod liver oil and showed improvement. It would seem advisable, if not contraindicated, to start such medication as early as the second month.

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[12] Reiche, A.: Das Wachstum der Frühgeburten in den ersten Lebensmonaten, Ztschr. f. Kinderh., 1915, 12, 369-401.

CONCLUSION

It is found that of sixty infants fed breast milk on the four-hour interval, by tube when necessary, kept sufficiently warm and protected against infection, thirty-six lived and twenty-four died, a gross mortality of 40 per cent. When, however, one deducts the fourteen deaths occurring on the first day, the mortality rate of the remaining forty-six cases falls to 22 per cent.

The most favorable view of the treatment employed is gained if only the forty-two babies living longer than five days are considered. Among these, including two who by better judgment and technic could have been saved, there were six deaths, giving a mortality of 14 per cent.[14]

TABLE 4.—PROGRESS OF SURVIVING INFANTS IN WEIGHT, CONTROL OF TEMPERATURE, NURSING ABILITY, ETC.

Case Number	Weight at Birth, Gm.	Day on Which Babe First Controlled Temperature	Day of First Bottle Feeding	Day of First Breast Feeding	Age at Discharge	Weight at Discharge	Day Artificial Heat Was Discontinued	Complemental Feedings Necessary at Discharge	Nursing Well at Discharge	Gaining Satisfactorily at Discharge	Remarks
8890	1,505	28	32	32	38	1,870	28	—	+	+	
8075	1,540	33	52	48	55	2,360	—	+	—	+	
10577	1,640	30	—	42	49	2,300	31	+	—	+	
8074	1,670	28	—	71	141	4,150	74	+	+	+	
10698	1,710	28	—	21	28	1,860	—	—	+	+	
11744	1,800	—	31	34	59	1,910	—	—	—	—	Much artificial feeding; mother did not cooperate
12619	1,800	14	4	10	59	2,800	15	—	+	+	
11112	1,870	37	18	19	38	2,100	16	—	+	+	
11457	1,925	21	—	12	28	2,640	—	+	—	+	
11621	1,930	10	10	26	39	1,830	27	—	+	+	
9838	1,940	72	67	—	168	3,770	—	—	+	+	Pseudorickets
12490	1,960	—	18	18	32	2,120	—	—	+	—	Temp. not controlled; weight gain slight
7570	1,965	15	..	6	19	1,950	—	+	—	+	
6536	2,000	21	34	..	151	4,350	—	—	—	+	Pseudorickets
7992	2,000	8	29	30	39	2,280	—	+	—	+	
7993	2,050	8	29	28	38	2,380	—	+	—	+	
12871	2,060	22	—	12	31	2,460	—	+	—	+	
8073	2,120	29	25	25	38	2,540	—	+	—	+	
8347	2,135	13	—	1	24	2,030	—	+	+	+	
11665	2,180	8	—	10	13	2,520	—	+	—	+	
9165	2,260	17	—	10	25	2,220	—	+	—	+	
10235	2,280	—	—	2	15	2,210	—	—	+	+	
9267	2,300	1	—	4	11	2,060	—	—	+	—	Temp. slightly subnormal; weight stationary
12876	2,300	—	—	6	10	2,290	—	+	+	+	
9703	2,370	18	—	15	26	2,630	18	—	+	+	
8590	2,380	—	—	3	10	2,220	—	—	+	—	Temp. not controlled; weight stationary
11390	2,400	3	—	4	11	2,310	—	—	+	+	
7427	2,440	..	..	5	11	2,160	—	—	+	—	Temperature 97 to 98 F.
9619	2,440	24	—	5	33	2,630	—	+	+	+	
10926	2,450	—	—	4	12	2,430	—	—	+	+	Temperature above 97 F.
9811	2,455	5	—	2	10	2,430	—	—	+	+	
8731	2,480	—	—	2	12	2,470	—	—	+	+	
7870	2,595	3	5	6	10	2,330	—	—	+	+	
11883	2,630	—	—	9	11	2,580	—	+	—	—	
7456	2,815	12	..	4	16	2,600	—	—	+	+	
7514	2,860	3	..	3	9	2,630	—	—	+	+	

ABSTRACT OF DISCUSSION

Dr. John Zahorsky, St. Louis: I have been much interested in the question of the premature infant for several years. It is much better practice to decide daily how much milk the baby shall have, by any method you choose. Write on the directions just the quantity of milk the baby should have each day, and the nurse should be instructed to give that amount *in twenty-four hours. In other words, prescribe daily rations,* and then try to get it to the baby. Sometimes you can do it on a four-hour schedule, and sometimes you have to feed more often to get the proper quantity. The feeding is the most important part of the care of the premature infant, not the regulation of the temperature. I always try to work on an energy quotient of 120 to 130 by the tenth day. I commence usually with only one fourth of that quantity—one fourth of 120, or an energy quotient of about 30 the first day, and gradually increase from day to day, until we have worked up to 120 or 130. This varies with the baby. I do not believe the interval makes any material difference. What does matter is that you get into the baby the required quantity of food. The *symptom of cyanosis which comes frequently* is due to apnea, and may frequently be due to exhaustion. There is not enough energy to keep up respiratory efforts. It is necessary to get *sufficient food into the baby, regardless of the intervals* between feedings.

As to the question of temperature, I think it is a little high in this paper. With a small baby, under 2,000 gm., it is necessary to commence with a temperature of from 85 to 90; you want to gradually reduce this temperature, because slightly overheating a baby often produces cyanosis, and not only that, it seems to diminish the internal power of oxidation. I like to keep the baby as cool *as possible, and still* maintain a bodily temperature of at least 98 degrees. The most important symptom to combat with a premature baby is apnea. Cyanosis is liable to occur *in* any feeble infant. To prevent this, in the first place I think a proper fat supply should be maintained. It might occur, of course, from overfeeding or from infection. These cases are always given some respiratory stimulant, in addition to oxygen to dispel the cyanosis, usually caffein or small quantities of tea. I think caffein is very helpful in stimulating the respiratory centers.

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[13] Rosenstern, I.: Hunger im Säuglingsalter und Ernährungstechnik, Deutsch. med. Wchnschr., 1912, **38**, 1834-1839.

[14] In addition to the references already given, the following will be found of interest:

La Fetra, L. E.: The Hospital Care of Premature Infants, Arch. Pediat., 1916, **33**, 352-356.

Dr. Isaac A. Abt, Chicago: I presume four-hour feedings will work out in a certain number of cases, even with premature babies. It seems to me that if a premature baby is fed only once in four hours, it will have to take a larger quantity at each feeding than if it were nursed every two or three hours. A baby's stomach at this time is naturally limited in size, and it appears to me that one gets better results if the baby is fed small quantities at relatively frequent intervals. I do not believe that the four-hour feeding plan should become a dogma. I see men who believe it is their whole business to have a baby fed only once in four hours, and if they think you order feedings every three hours they stand aghast. After all, we are dealing with individuals, and while a certain number of prematures may do well on four-hour feedings, I believe most prematures should be fed more frequently—possibly every two or three hours. Budin laid down the principles in his little book that prematures suffer from two great troubles—one, difficulty in maintaining body temperature, and secondly, most of them fail to prosper because of insufficient food. It seems to me, in order to supply the amount of food they need, they should be fed small quantities at frequent intervals. Dr. Taylor has already made the point that these babies should receive breast milk. This should be emphasized over and over again. Premature babies who are fed malted milk or condensed milk, or even cow's milk diluted, are extremely difficult to raise. I believe no real success can be obtained with these infants unless they receive breast milk.

Dr. Lawrence T. Royster, Norfolk, Va.: Most of the work I have done with prematures has been in private practice, outside of hospitals—a number were in outlying country districts where facilities were few and nurses often not available. I have met with some degree of success. As Dr. Abt has said, we must consider the individuality of the patient. The stomach of the premature infant varies just as much as the full-term infant's stomach does. Therefore, the ratio between the quantity given and the size of the stomach must be studied individually. I do not believe I ever fed a premature infant at four-hour intervals. From the standpoint of a private practitioner, outside of hospitals, I do not believe that it is feasible without a stomach tube. I do not use a stomach tube frequently because I have not often a person near who is qualified to do it. Of course, where there is no nursing power, that is essential. My most frequent interval for the first few days is two hours, and 1 to 2 drams is all that we can get in. I have tried a larger amount and a longer interval, but found that the babies did not thrive. Breast milk in these cases is almost a sine qua non. Some of the smallest premature babies I have ever reared never had a drop of breast milk. My plan in these cases has been to start with whey. Some will criticize this. However, I am talking from experience. Whey, diluted or whole, according to the patients' ability to assimilate, is a very good substitute for tiding over this time. After they take this, I then go to a straight modification of cow's milk.

Prematurity, of course, is a terrible handicap for a baby. A great many premature babies come as a result of various "accouchement forcé" methods which may be necessary on account of the condition of the mother. I do not wish to enter into a discussion of cesarean section, etc., but we have found that premature babies who have come as a result of cesarean section have given us an easier task than those brought into the world by rapid dilatation, and then the necessitated handling of the child with forceps.

Dr. Frank C. Neff, Kansas City, Mo.: I think we should not overlook one thing Dr. Taylor has mentioned, and that is the aseptic handling of these babies. As you all know, premature babies are a matter of great curiosity. I have found it very difficult to keep visitors away, and it can easily be seen how infection can occur. As to what Dr. Royster said as to feeding these babies with a tube, I do not think it is particularly difficult. On several occasions I have shown the mother how to use the tube, and she has done it successfully. I want to ask Dr. Taylor one thing: At what period does a gain in weight usually begin?

Dr. Jane M. Ketcham, Indianapolis: Premature babies should not be overhandled. With them I use a stomach tube every four hours for the first week. In the effort to get the child to nurse it is often handled too long and becomes chilled, and thus you defeat your own end. The stomach tube is a great advantage. After the child has the strength to nurse it is better for it to make the effort. It is an advantage to have the baby weighed before and after every feeding, so that we may know how much it is receiving. The symptom of vomiting is of the greatest importance and must not be overlooked, because when a child once begins to vomit it is impossible to know how much food it is retaining or for it to retain sufficient. The symptom of cyanosis can best be treated by oxygen, hypodermically, or by 5 to 20 per cent. glucose solution. The body fluids must be kept up at all costs. This is equally as important as maintaining an equable temperature. Great care must be taken not to overhandle a child.

Dr. Jules M. Brady, St. Louis: When this four-hour interval was first called to my attention in 1910, I did not see how it was possible to get sufficient nourishment into a premature infant in this way. It is like everything else—we have to try it to be convinced. Having had experience in numerous hospital cases, I have been convinced. There is one symptom that will throw a scare into one, and that is vomiting. When this appears, I think the chances of bringing through the premature are diminished. Feeding breast milk at four-hour intervals I think is the best method to prevent the appearance of this vomiting, which is so dangerous to the premature infant. If you cannot get breast milk, as sometimes occurs, I believe it is necessary to feed at shorter intervals.

Dr. Jay I. Durand, Seattle: Hunger is a detriment to a baby, and keeping babies on a starvation diet has, I think, done more damage than any other one fault in our infant feeding. Barley water for more than a twenty-four-hour period is never necessary in gastro-intestinal disturbances, and no variation of the normal feeding need be made in parenteral disturbances except the reduction, which no child voluntarily makes by refusing part of the nursing. The younger the baby, the greater is the danger from hunger. In prematures, the four-hour interval is the best. I had one premature of 2 pounds 3 ounces, which gained beautifully on four-hour feeding intervals, but you must see to it that the infant gets enough to cover its caloric needs. If the baby does not take enough from the breast, bottle, dropper or Breck's feeder, gavage must be used.

Dr. Edgar J. Huenekens, Minneapolis: I am especially interested in the rickets or pseudorickets that these premature infants develop. In a recent series of cases, I found 92 per cent. showed evidences of rickets. I believe this depends on a shortage of calcium in the infant's organism. Basing my treatment on the work Schloss has done in the treatment of rickets in breast-fed infants, I give these babies tricalcium phosphate with cod liver oil. I use a 10 per cent. mixture of tricalcium phosphate in an emulsion of cod liver oil. The results seem to warrant further trial.

Dr. Harry Lowenburg, Philadelphia: Several years ago in discussing this subject, I took the stand that we should treat the individual. It is very dangerous to become dogmatic about anything in medicine, especially infant feeding. Another thing comes to my mind, and that is that in passing the tube to feed these infants, it is much easier in my experience to pass it through the nose. I have also used a 5 per cent. sterile solution of glucose injected through the anterior fontanel directly into the longitudinal sinus, and I feel that it has done some good. Obstetricians are the chief offenders in destroying the maternal milk supply. I think that they should be told that either they should learn the principles of infant feeding, or leave the premature infant alone, as well as other infants.

Dr. F. C. Wahrer, Fort Madison, Iowa: Prematurity is the exception, and when we are making rules, let us not forget the exceptions. When you make a rule for all, you must use the rule and the exception; in some cases the rule may apply, in some the exception—and in some others the exception to the exception. Suppose a child is born four weeks too soon. At the end of two months is it 4 weeks old or 2 months? Does it still partake of the condition in utero pertaining before its birth? If it does, then there is some good sense in feeding a child at four-hour intervals, which would not have been fed anything if it had remained those four extra weeks in utero. I think it is a question whether it even needs to be fed as often as Dr. Taylor suggests. But since we cannot make rules for every child, we must adopt separate rules for each child, as I am sure that some premature children must be fed oftener than other equally premature children.

Dr. Abraham Jacobi, New York: I believe, as has been said, that every case has to be treated individually. You have to use your brains. I believe every one who has spoken was correct—correct in his own case—but only in his own case. We should study the babies and study the babies' mothers, and we will be better off. I am not in a position to say that your babies and the other doctors' babies will do well on the same treatment. That is impossible.

Dr. Rood Taylor, Rochester, Minn.: I went over the charts of Dr. Sedgwick's patients at the University of Minnesota Hospital. I was so much interested in what I found on those charts that I secured Dr. Sedgwick's permission to report what I found. All those babies happened to be fed on the four-hour interval. All the prematures did well on it. There is this to be said for using a standard interval—it helps one to gage when the tolerance of that particular baby is being overtaxed. Dr. Zahorsky mentioned the importance or nonimportance of the baby's maintaining its own temperature. There were nine patients in this series who were not maintaining temperatures very well. Of these, six were not gaining. As regards the small amounts of breast milk taken at a time, I think the reason most often is not the size of the baby's stomach, but the inability of the premature baby to nurse well, whether it is due to lack of the sucking reflex or what not. The stomach of the new-born is much more active than that of the adult, and the stomach of the premature infant is much more active than that of the new-born, as the latter is more active than the stomach of the adult. Although no work has been done on the subject, I believe the stomach of the premature infant empties itself more rapidly than the stomach of the full-term infant.

We do not see in the hospital, nor have I seen outside of it, women with premature babies, who did not have breast milk. Some of these women were very sick, and some septic, but if we wait long enough there will be breast milk. Without exception, we have always had breast milk for the premature baby—that is, provided the mother lived. In regard to the use of the nasal tube, I have had no difficulty in passing the tube through the mouth, and I believe it is generally considered safer to pass through the mouth because of the danger of passing it in to the cranium. These babies gained weight very slowly, but came along all right in the end.

Health and Ethics.—The basis of ethics, then, is the health of the community. That fact we know, but we do not know it fully; we have not exhausted its riches. We have improved sanitation; we have improved the conditions of labor both as regards positive risks and the character of buildings. In these things the best and the most efficient have proved identical; so far economics has supported ethics. But economic production and efficiency are liable to be dangerous allies; we must not be led astray by a false ideal of industrial growth. Nor must we suppose that our duty ends with the physical welfare of the population. Already there are ample proofs that we shall be carried from external to internal conditions, from individual to racial questions, from health of body to health of mind. And by health of mind must be understood much more than crude questions of insanity, crime and feeblemindedness. The human race tends to emphasize more and more its own peculiar feature; its consciousness becomes more acute and more comprehensive; it cannot, like the animal, merely eat and drink and sleep; while we teach prudence and thrift we are developing, if I may so put it, the organs of worry and anxiety. This too will have its pathology, personal and social, an evil which is far from imaginary and has its witness in much of the present unrest. All these things must be included in our idea of the "public health" and we must organize for nothing less comprehensive.—G. S. Brett, *Public Health Journal*, August, 1918.

A FURTHER CONSIDERATION OF COMPLEMENT FIXATION IN TUBERCULOSIS *

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The demonstration of antibodies in the circulating blood by complement fixation was first accomplished by Bordet and Gengou[1] and its application was made to tuberculosis by them several years before Wassermann and Bruck successfully applied the test in syphilis. If medical men should desire a less cumbersome term than the complement fixation test for tuberculosis it seems they could not do better than to term it simply "the Bordet test." The term has the advantage of brevity. It is historically accurate, and would fittingly perpetuate the name of the distinguished French investigator who first demonstrated the part played by complement in immune reactions—a discovery by which his German contemporaries were not slow to profit.

Wassermann and Bruck[2] made experiments with complement fixation in tuberculosis before they developed the test for syphilis, and subsequently Citron[3] made similar experiments. In these earlier tests, Koch's "old tuberculin" was used as antigen. For several years no marked progress was made in applying the test to the diagnosis of tuberculosis, possibly because of variation in the results in the earlier tests. Within recent years numerous articles have appeared reporting favorable results in the application of the test to extensive series of cases. The most significant feature of these reports is that, while there are differences in data and percentages due evidently to the different methods and reagents used, there is agreement that complement fixation under proper conditions gives positive results in the majority of cases of active tuberculosis. The laboratory technic employed in this test is the same in principle and in main details as in complement fixation applied to the diagnosis of syphilis. As in that test there have been many variations in the technic and in the reagents employed, and as would be expected, the results have also varied. The widest variation occurs in the preparation used as antigen, but each of the antigens used successfully has consisted of some preparation of tubercle bacilli. The reaction is one of biologic specificity depending on the presence in the patient's serum of free antibodies specific to tubercle bacilli. In this particular, the situation differs from that in syphilitic infection.

In reviewing the reports of this test, Miller[4] has classified the antigens into the following groups:

Group I. Antigens consisting of suspensions of whole or ground up tubercle bacilli.

Group II. Antigens which may be classed as tuberculins.

Group III. Antigens consisting of extracts or derivatives of tubercle bacilli.

Group IV. Preparations or extracts of normal and tuberculous organs, as lungs, lymph nodes, spleen, etc.

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* Read before the Section on Pathology and Physiology at the Sixty-Ninth Annual Session of the American Medical Association, Chicago, June, 1918

[1] Bordet and Gengou: Compt. rend. Acad. de sc., 1903, **137**, 350. Ztschr. f. Immunitätsforsch. u. exper. Therap., 1914, **21**, 77.

[2] Wassermann and Bruck: Deutsch. Med. Wchnschr., 1906, **32**, 449.

[3] Citron: Berl. klin. Wchnschr., 1907, **3**, 1135.

[4] Miller: Jour. Lab. and Clin. Med., 1916, **1**, 816.

Such antigens are analogous to the *original antigen* used by Wassermann in the complement fixation test for syphilis. Their use in tests for tuberculosis has not been attended with success sufficient to warrant serious consideration.

TESTS OF GROUP I ANTIGENS

Among the reported series of tests in which antigens of Group I were employed the following are cited as examples:

Caulfield and Beatty,[5] using "bacillen emulsion" as antigen, reported positive results in different types of tuberculosis ranging from 33 to 70 per cent. of cases. They also used Koch's old tuberculin as antigen in this same series of cases with positive results in less than 50 per cent. of the cases.

McIntosh and Fields,[6] after experimenting with various antigens, concluded that a suspension of living virulent tubercle bacilli constituted the best antigen. They reported positive results in pulmonary tuberculosis in 76.6 per cent. of the cases; in "surgical tuberculosis," 80.7 per cent., while among eighty-seven control cases only three were positive. It is of interest to note that two of these three cases were lepers, while the third was Addison's disease, which should be considered as tuberculous.

Radcliffe,[7] using a suspension of fresh tubercle bacilli as antigen, obtained 88.6 per cent. positive in early tuberculosis, 89.6 per cent. positive in moderately advanced tuberculosis, and 79 per cent. positive in far advanced cases. In 204 control cases there were no positives.

Miller and Zinsser[8] reported a remarkable series of tests, using as antigen tubercle bacilli from a large number of strains ground for an hour with dry salt and then suspended in distilled water. This antigen has the advantage of great simplicity in its preparation, and they stated that it will not deteriorate if kept for weeks at icebox temperature. They reported 284 cases of pulmonary tuberculosis with positive test in 97 per cent., 140 doubtful and suspicious cases with 22.8 per cent. positive, 113 inactive or arrested cases with 9 per cent. positive, while 144 nontuberculous controls were uniformly negative. Of forty-five Wassermann positive serums, only two were positive with their antigen. The writers stated that tuberculosis could not be positively excluded in these two cases.

Burns[9] and his colleagues, using Miller's antigen described in the foregoing, obtained equally consistent results, though their percentage was slightly lower than that of Miller and Zinsser. They compared the results of the tests with the patient's clinical condition, whether gaining or losing ground. They noted that patients who are holding their own, or gaining in physical condition, give the highest percentage of strongly positive tests, while those who are losing ground give the highest percentage of weakly positive or negative reactions. They regard the presence of complement-fixing substance in the blood as evidence of the patient's resistance and ability to form antibodies, and interpret the foregoing observations as revealing the amount of resistance the patient has available with which to combat the infection. Their view seems logical. We can readily understand how, when the system is being overwhelmed by the infection, the antibodies may be combined with the bacilli and their products as rapidly as the patient's system can elaborate them, thus leaving no free antibodies to be demonstrated by complement fixation. Conversely, if the patient is holding his own or gaining in condition, it is not surprising to find strongly positive reactions if the degree of the reaction is in any way dependent on the amount of free antibody in the circulating blood.

TESTS OF GROUP II ANTIGENS

Following are a few examples of reported series of tests using as antigen preparations of tubercle bacilli which may be classed as tuberculins, or Group II antigens.

Besredka[10] used a heated filtrate of tubercle bacilli which had been grown on a special culture medium. He found reactions uniformly positive in incipient and early tuberculosis, almost always positive in moderately advanced tuberculosis, and weakly positive or negative in far advanced cases. He laid stress on this point, since it made the test valuable in two ways: The fact that the test was uniformly strongly positive in early cases made it of especial value in the diagnosis of early and suspicious cases, while in well advanced cases in which the clinical evidence left no doubt as to the diagnosis, a weakly positive or negative test enabled him to offer a prognosis, since it served as an index to the patient's resistance. He observed, however, that the serum of syphilitic patients frequently gave a positive reaction with his antigen.

Inman,[11] using Besredka's antigen, obtained a positive reaction in ninety-five out of 100 cases of pulmonary tuberculosis. Of suspected cases in which there was no definite clinical evidence of tuberculosis, thirty out of fifty cases, or 60 per cent., were positive. Of 100 patients who were in the hospital for other conditions and in whom there was no suspicion of tuberculosis, twenty-four gave a positive test. Inman concluded that a positive test should be considered as evidence of an active tuberculous focus, while a negative reaction indicates either a healed lesion or absence of tuberculous infection.

Debains and Jupille,[12] using Besredka's antigen, obtained positive results in 90.5 per cent. of cases in the first and second stages and 81.3 per cent. in the second and third states of tuberculosis. Patients ill of other conditions than tuberculosis showed positive reactions in 17.3 per cent., while normal healthy persons were positive in 3.2 per cent. of the cases. The writers found that Wassermann positive serums gave positive results with Besredka's antigen in 24 per cent. of the cases.

Bronfenbrenner[13] used Besredka's antigen and conducted an elaborate study of various phases of the Bordet test. He also experimented with antigens prepared by the methods of Craig, Corper and Calmette. His investigations are of such significance that it is difficult adequately to review them in the limited space of this summary. Those who are interested are referred to his reports for particulars. He found positive results in 72 per cent. of clinically suspicious cases. Clinically tuberculous cases in the first stage were positive in 84 per cent., in the second stage in 94 per cent., while far advanced or third stage cases gave the remarkably low proportion of 15.3 per cent. positive. He found that a high percentage of Wassermann positive serums gave a positive reaction with Besredka's antigen, while 352 nonsyphilitic, nontuberculous controls were positive in 5.6 per cent. of the cases. He found that there is a "strain specificity" in the complement-fixing substance in serums from tuberculous patients, as evidenced by the fact that a given serum will give a positive reaction with antigen prepared from certain strains of tubercle bacilli, and weakly positive or negative reactions with antigens prepared from other strains. This probably accounts for many of the variations in the results of different investigators. It also gives point to the use of an antigen prepared from many strains of bacilli, that is, a polyvalent antigen. As to the fact that a high percentage of syphilitic serums give positive reactions, it is well known that the complement binding substance in syphilitic serum is not an antibody specific to the *Spirochaeta*, but is a lipotropic substance which may bind complement in the presence of the lipoidal substance present in tubercle bacilli, thus giving rise to false positives by cross fixation. Bronfenbrenner showed that the antibody in a tuberculous patient's serum is a specific antibody and that it is not lipotropic in character. This antibody reacts with the protein fraction of the antigen after the lipoidal fraction has been removed. He further showed that the serum of patients having both tuberculosis and syphilis contains both types of antibody, either of which could be exhausted from the serum by allowing it to combine with its appropriate antigen, leaving the other antibody present in the serum in undiminished quantity. On this basis he used Besredka's antigen freed by precipitation from its lipoidal substances, in an attempt to eliminate the false positives by cross fixation in syphilitic serum. His statement of the success of this is not clear. As to the remarkably low percentage of positive tests in far advanced tuberculosis, he stated it may be because (1) the resistance of the patient is exhausted, no new antibody being formed, and (2) the antibody is taken up by combination with the bacilli and their products in the system as rapidly as formed. This view, it will be noted, is in accord with that discussed earlier in this paper. Bronfenbrenner was able to verify this view by animal experimentation. He found that guinea-pigs inoculated with tubercle bacilli frequently gave positive complement fixation test as early as from five to seven days following the inoculation, while in advanced stages, from four to six weeks after inoculation, the test became negative. Bronfenbrenner concluded that positive fixation indicates active tuberculosis and that the application of complement fixation to the diagnosis of early tuberculosis is at hand.

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[5] Caulfield and Beatty: Jour. Med. Research, 1911, **24**, 122.

[6] McIntosh and Fields: Lancet, London, 1914, **2**, 485.

[7] Radcliffe: Lancet, London, 1914, **2**, 488.

[8] Miller and Zinsser: Prac. Soc. Exper. Biol. and Med., 1916, **13**, 134. Miller, H. R.: The Clinical Value of Complement Fixation in Tuberculosis, The Journal A. M. A., Nov. 18, 1916, p. 1519.

[9] Burns, N. B., Slack, F. H., Castleman, P., and Bailey, K.: Application of the Complement Fixation Test to Tuberculosis, The Journal A. M. A., May 12, 1917, p. 1386.

[10] Besredka, A.: Compt. rend. Acad. de sc., 1913, **156**, 633.

[11] Inman: Compt. rend. Soc. de biol., 1912, **73**, 120.

[12] Debains and Jupille: Compt. rend. Soc. de biol., 1914, **76**, 199.

[13] Bronfenbrenner, J.: The Complement Deviation Test with Besredka's Tuberculin and the Occurrence of Tuberculosis Among Syphilitics as Diagnosed by this Test, Arch. Int. Med., December, 1914, p. 786; Science, 1914, **39**, 808; Tr. Nat. Assn. for Study and Prevent. of Tuberc., 1916, **12**, 225; Proc. Soc. Exper. Biol. and Med., 1914, **11**, 92; Jour. Lab. and Clin. Med., 1917, **3**, 50.

Craig[14] used Besredka's antigen modified by extracting with alcohol. The antigen contained many strains of tubercle bacilli including the bovine type. His results were summarized in three groups.

1. This group consisted of 209 cases of known tuberculosis. The percentages were: incipient cases, 96.7 per cent. positive; moderately advanced cases, 98.3 per cent. positive, and far advanced cases, 96.3 per cent. positive, while inactive and arrested cases showed a much lower percentage.

2. The second group consisted of other clinical conditions. Four hundred and fifty patients, ill of other conditions, including syphilis, gave a positive test in 4.4 per cent. of the cases. Three hundred and fifty cases of syphilis were positive in 5.4 per cent. of the cases. Four of these cases were later diagnosed as tuberculosis by the finding of tubercle bacilli in the sputum.

3. The third group consisted of 200 healthy young soldiers. One case, or 0.5 per cent., gave a positive test and this soldier afterward developed active clinical tuberculosis.

Craig stated that this test will not give positive results in other conditions than tuberculosis, and that his results, together with others, demonstrate that complement fixation in tuberculosis has reached the stage at which it may be used with confidence by practitioners in the diagnosis and as a criterion of cure in tuberculosis. He also stated that a positive test means the presence of an active tuberculous focus, and that as long as the test remains positive the patient cannot be considered cured. He called attention to the fact that his series shows a higher percentage of positive reactions than he himself could obtain in a like series of Wassermann tests in cases of active syphilis. He believes it is only a matter of time until this test will be as widely used as the Wassermann test.

McCaskey[15] used Craig's antigen, but his percentages were much lower. Among thirty-six cases of clinical tuberculosis, twenty-eight cases, or 77.7 per cent., were positive. Among seventy-four cases of other diseases, fifteen cases, or 20.2 per cent., were positive. Among twenty-five cases with positive Wassermann tests, eleven cases, or 44 per cent., were positive. Only two of these had clinical evidence of tuberculosis.

Petroff,[16] using three different antigens, obtained highest results with one of his own modification, which may be classed in the group of tuberculin antigens. He obtained in suspicious or doubtful cases 65 per cent. of positives; in incipient cases 81.2 per cent. were positive; in moderately advanced cases 91 per cent. were positive. Far advanced cases were 100 per cent. positive, although his number of cases in this group was too small to be conclusive. In fourteen normal controls and seven cases of arrested tuberculosis the test was uniformly negative.

TEST OF GROUP III ANTIGENS

Following are a few examples of Group III antigens consisting of extracts or derivatives of tubercle bacilli.

Calmette and Massol[17] used a special water and peptone soluble preparation of bacilli with which they obtained positive results in 124 out of 134 known tuberculous cases, or 92.5 per cent.

Corper[18] used an antigen in which tubercle bacilli were autolyzed for days at incubation temperature in salt solution. His percentage of positive results was not so high as that of others, possibly because of the fact that his antigen was prepared from a single strain of tubercle bacilli, while the prevailing opinion is that a number of strains should be represented in the antigen. This point is especially emphasized by the work of Bronfenbrenner, Craig and Miller. Corper reported a considerable percentage of false positives resulting from cross fixation with syphilitic serum, and concluded that this occurred with sufficient frequency that a Wassermann test should be performed on all serums tested for tuberculosis, and in the presence of a positive Wassermann test a positive result with tuberculous antigen must be regarded as inconclusive.

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[14] Craig, C. F.: Am. Jour. Med. Sc., 1915, **150**, 781; The Complement Fixation Test in the Diagnosis of Tuberculosis, The Journal A. M. A., March 10, 1917, p. 773.

[15] MacCaskey: Am. Jour. Med. Sc., 1917, **154**, 648.

[16] Petroff: Tr. Nat. Assn. for Study and Prevent. of Tuberc., 1916, **12**, 214; Am. Rev. Tuberc., 1917, **1**, 33.

[17] Calmette and Massol: Compt. rend. Soc. de biol., 1912, **73**, 120.

[18] Corper, H. J., and Sweany, H. C.: Jour. Infect. Dis., 1916, **19**, 315; Tr. Nat. Assn. for Study and Prevent. of Tuberc., 1916, **12**, 205; Complement Fixation Tests in Tuberculosis, The Journal A. M. A., June 2, 1917, p. 1598.

Dudgeon, Meek and Wier,[19] after experimenting with a number of antigens, published their highest percentage of positive results from an alcoholic extract of tubercle bacilli. This gave 89.3 per cent. positives out of 234 cases of known tuberculosis.

If space permitted, many other equally valuable reports might be reviewed. I will close this section of the discussion by quoting one opinion from the clinical viewpoint. Dr. Meyer,[20] under whose clinical supervision this test was used diagnostically in hospitals for tuberculosis in New York, stated that the test was positive in 96 per cent. of tuberculous cases under his supervision, and that those cases in which it was negative were clinically arrested cases. He concluded as follows: "It is no exaggeration to say that the method equals in value the Wassermann test for syphilis. It is most important that complement fixation tests be made on as large a scale as possible both in sanatoriums and private life."

COMPARISON OF ANTIGENS

The foregoing reports, summarized in the accompanying tabulation, agree in the main particulars. Antigens prepared by widely different methods have given high percentage of positive tests especially in early tuberculosis, while the percentage of positives in normal individuals approaches zero. There is agreement that the test is most useful in detecting early cases, but there is difference in the evidence regarding far advanced cases, Bronfenbrenner and others finding a decrease in the percentages of positives in this group, while Miller, Craig and others find no such decrease. There is also a difference in the data regarding tests on syphilitic serum. This difference seems unexplainable when several investigators have used antigen prepared by the same method.

As to the antigens, it is difficult to draw conclusions as to their relative merits. Antigens from Groups I and II, however, seem to have produced the highest percentage of satisfactory tests. It seems to be agreed that the antigen should contain many strains of tubercle bacilli.

ANTIGEN PREPARED BY MILLER'S METHOD

My own experiments with this test began with experiments with antigen prepared by Miller's method. In the beginning, serums were used from known tuberculous cases only, and variations in technic were employed to establish a satisfactory working technic. It was soon found that specific antibody in tuberculous serum is often present in very small amount and that extreme care is necessary in the technic in testing for it. The sheep hemolytic system was used and the reagents were adjusted as follows before each test: Fresh sheep corpuscles, after repeated washing with salt solution, were centrifuged at a fixed speed for a fixed time, fifteen minutes. This was to secure a uniform packing of the corpuscles in order that quantitative measurement of them would be more accurate. A 2 per cent. suspension of these packed corpuscles was then made and the amount of fresh guinea-pig serum was determined which would cause complete hemolysis in thirty minutes at 38 C. of 0.5 c.c. of the 2 per cent. corpuscle suspension in the presence of two carefully determined units of hemolytic amboceptor. The total volume in all titrations and tests was brought to 1 c.c. by the addition of physiologic sodium chlorid solution.

RESULTS OF EXPERIMENTS BY DIFFERENT WORKERS

Name	Suspicious		Early Tuberculosis		Moderately Advanced		Far Advanced		Other Conditions		Normals	
	Cases	%+	Cases	%+	Cases	%+	Cases	%+	Cases	%+	Cases	%+
Caulfield	...	....	...	33.0	...	70.0	...	63.0				
Radcliffe	...	....	...	88.6	...	89.6	...	79.0	...	....	204	0
Miller	140	22.8	82	100.0	110	98.0	83	98.0	45	4.4	144	0
Inman	50	60.0	...	....	100	95.0	...	....	100	24.0		
Debains	...	....	...	....	...	90.3	...	81.3	...	17.3	...	3.2
Bronfenbrenner	50	72.0	...	....	65	93.8	...	....	375	8.0		
Craig	...	....	30	96.7	61	98.3	54	96.4	450	4.4	200	0.5
McCaskey	8	25.0	...	....	36	77.7	...	....	74	20.2	9	11.1
Petroff	20	65.0	64	81.2	123	91.0	2	100.0	14	7.0	14	0
Corper	69	43.6	28	35.7	61	70.5	63	61.0	31	19.3		
Moon	61	60.0	24	87.5	49	85.7	83	84.3	23	26.0	100	12.0
Calmette	...	....	...	....	134	92.5*						
Dudgeon	...	....	...	....	234	89.3*						
McIntosh	...	....	...	....	...	76.7*	...	....	...	....	87	3.5

* Various stages grouped.

In the making of the tests, two units of complement, determined as described, were incubated with 0.1 c.c. of the patient's serum and a suitable quantity of antigen for one hour, after which two units of amboceptor and 0.5 c.c. of 2 per cent. corpuscle suspension were added and again incubated for one hour. Suitable controls were made on each reagent used, and the antigen was never used in greater quantity than one third of the smallest amount that would give evidence of slight anticomplementary action. The objection is raised against using the sheep hemolytic system that it is necessary to inactivate the patient's serum by heating, and that this lessens considerably the activity of its antibodies. We found by trial that a temperature of 55 C. for five minutes is sufficient to destroy complement, so inactivation of the serums to be tested was done by heating to 55 C. for ten minutes. The shortened time of heating probably has less effect on the antibody content of the serum than the thirty minute period usually employed. It was found that 1 c.c. of the patient's serum was sufficient for the tests, as no positive tests were obtained by using a larger quantity of serum which was negative in 0.1 c.c. quantity.

The antigen employed was prepared by taking an equal quantity by weight of fresh tubercle bacilli from each of twelve different strains of the human type and four strains of the bovine type. This was mixed with sodium chlorid, C. P., according to Miller's formula: 20 mg. of bacilli plus 90 mg. salt, ground for an hour with a glass rod, then suspended in 10 c.c. of distilled water. The antigenic and anticomplementary quantities were determined by suitable titration. We allowed this suspension to autolyze for several days at 38 C., as suggested by Corper, with improvement in the quality of the antigen in some cases. However, unless strict asepsis was maintained in the preparation of the antigen the autolyzing process allowed contaminating organisms to develop causing undesirable qualities to appear in the antigen. I have convincing evidence that contaminated antigen causes false positives in the test. This objection also applies to antigen which is kept for a long time at icebox temperature. In attempting to produce an antigen that would keep indefinitely without deterioration, we tried the following method. Tubercle bacilli and salt in the foregoing proportion were desiccated for twenty-four hours over sulphuric acid. This greatly facilitated the grinding which resulted in an extremely fine white powder. Microscopic examination of smears made from this powder showed that most of the bacilli were fragmented. The powder would keep indefinitely in a sealed tube. The antigen was prepared by dissolving 50 mg. in 5 c.c. of distilled water and either used directly or after forty-eight hours' autolyzation at 38 C. The antigen seemed to give satisfactory results, and one specimen of powder tested after two years' storage at icebox temperature seemed as usable as when first prepared. I was so satisfied with this antigen that I used it for many months in routine tests, and the great majority of the cases here reported were tested with this antigen. However, I noticed that the percentage of known tuberculous cases which gave a negative test was running continuously higher than other workers had reported. In seeking an explanation for this, an antigen was prepared from fresh young cultures of the same strains of bacilli. These were fully virulent and were not attenuated by heating or desiccation. These two antigens were run simultaneously on a series of cases and it was found that the number of positives among known tuberculous cases was distinctly higher with the fresh antigen and that the reactions were more distinct. I have abandoned the dried antigen in favor of that prepared fresh from young virulent cultures. This antigen in a limited series of the cases has given 96 per cent. positive reactions. The results from this antigen will be reported later. The experience with antigen prepared from desiccated bacilli is here reported, but its use is not recommended, since it lacks in delicate antigenic properties.

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[19] Dudgeon, Meek and Wier: Jour. Hyg., London, 1914, **1**, 72.

[20] Meyer: Tr. Nat. Assn. for Study and Prevent. of Tuberc., 1916, **12**, 219.

RESULTS IN ONE HUNDRED AND FIFTY-SIX TUBERCULOUS CASES

There were 156 cases diagnosed clinically as tuberculosis. Of these, 133 cases, or 85.2 per cent., gave a positive test. These were subdivided as follows: Twenty-four cases of incipient tuberculosis were positive in twenty-one cases, or 87.5 per cent.; forty-nine cases classed as moderately advanced were positive in forty-two cases, or 85.7 per cent.; eighty-three cases classed as far advanced were positive in seventy cases, or 84.3 per cent. It is noticed that there is a more frequent occurrence of negative tests in the far advanced cases. This point has been observed by others as discussed above. However, this feature does not seem to have direct value as indicating the degree of the patient's resistance in our experience, as in four cases which terminated fatally, the serum gave a strongly positive test within two weeks prior to death.

There were sixty-one cases in which there was clinical suspicion of tuberculosis, or at least the clinician felt it necessary to consider tuberculosis before making a diagnosis. These cases had no definite evidence of tuberculosis and hence belonged to the class in which this test will probably be of greatest service as an aid to diagnosis. Twenty-four of the sixty-one cases, or 40 per cent., gave a positive test.

There were twenty-three cases which presented other clinical conditions in which tuberculosis was not suspected; six of these, or 26 per cent.. gave positive test.

The Bordet test was applied to 100 serums which were strongly positive by the Wassermann test. Of these, thirty-eight reacted positively. Histories of all these cases were not obtainable, but in view of the recognized frequency of occurrence of tuberculosis in syphilitics, it is probable that many of them were tuberculous. However, it is not fair to assume that all of them were, and I agree with the opinion of others, that a Wassermann test should be made on each serum tested for tuberculosis, and that in the presence of a positive Wassermann test, a positive result with tuberculous antigen should be regarded as inconclusive. This practice has been followed in the series here reported. It has resulted in establishing a positive diagnosis of syphilis in several cases in which tuberculosis, not syphilis, was suspected. An attempt was made to eliminate the positives occurring with Wassermann positive serum, by extracting the tubercle bacilli with absolute alcohol and ether and preparing the antigen from the insoluble residue. Such antigen showed no difference from that containing the whole tubercle bacilli either in tests on known tuberculous serum or on Wassermann positive serum.

There were 100 young healthy adults, for the most part medical students, who submitted themselves as controls. Of these, there were twelve who have positive reactions, on repeated tests. Two of these, on submitting to a careful physical examination without the examiner's knowing the result of the test, were found to have physical signs sufficient to class them as suspicious. Those who have had a wide experience concerning necropsy examinations will substantiate the statement that a high percentage—60 per cent. according to some reports—of adults dying from other causes show evidence of previous tuberculous infection. The opinion is that these small healed lesions were active in early or young adult life. Often the lesions are so small as to escape even the most searching physical examination. Personally, I am of the opinion that it would be difficult to find a group of 100 young adults chosen at random, which would not contain a few members with slight, active tuberculous lesions. It is probable that some of the positives in this group were tuberculous, and that the remainder were false positives due to an imperfect antigen.

CONCLUSIONS

Complement fixation in tuberculosis should be regarded as an established technic, well past the experimental stage. Its value will be greatest as an aid in the early diagnosis of tuberculosis. It should be regarded in the same manner as the Wassermann test, not as a test on which alone the diagnosis may rest, but as evidence which, considered together with other evidence, will be of real value in establishing the diagnosis. Its value will be great or small exactly in proportion to the use made of it by practitioners in an attempt to detect early incipient tuberculosis, and to aid in establishing the diagnosis of doubtful or suspicious cases.

I have found that a freshly prepared antigen containing living virulent bacilli is superior to one containing dried organisms, although the latter will keep indefinitely.

Until some antigen is devised which will not give false positives by fixation with the lipotropic antibodies of syphilitic serum it will be necessary to exclude the presence of the latter by the Wassermann test before basing conclusions on the results. Craig and Miller seem to have prepared such an antigen. I was unable to verify this statement with antigen prepared by Miller's method.

ABSTRACT OF DISCUSSION

Dr. Augustus B. Wadsworth, Albany, N. Y.: There are so many reactions in the complement fixation of the tubercle bacillus that it is difficult to tell just which of the reactions are significant in the diagnosis of the disease. We ought to proceed cautiously and conservatively in accepting all of the results. There has been considerable difference of opinion and considerable difference in the statistics of the results that some observers have had in the course of their investigations. At the time of the early work with the Wassermann test in the diagnosis of syphilis it was not possible, for the purpose of comparison, to use accurately controlled experimental investigations of the reaction of the test based on infection in animals. The Wassermann test was practically established before this became possible, but it is now possible to study the results of these tests of complement fixation in tuberculosis infection by experimentation on animals. The previous work has failed to take into account the value possibly of comparative study in animals. The immunization of animals, not only with the dead tubercle bacilli or cultures, but the study and development of immunity with specific antigens, can be used to determine just what reactions are obtained.

In my laboratory we have taken up the work quite extensively, and, while we have made little progress with it, we have found that it is practical to carry on parallel experiments with animals. I do not know but what we may meet with some insurmountable obstacles, but it looks to me now as though it would be possible to prepare the antigens. I should like to ask Dr. Moon if he has had any experience in his work with animal tests of the antigens which he has used, or tested the reactions that may develop in the serum of inoculated or tuberculosis animals.

Dr. J. J. Seelman, Milwaukee: In the complement fixation test for tuberculosis, just as in the Wassermann test for syphilis, we must consider the findings in connection with the clinical aspects of the case. It would be unjustifiable to make a diagnosis of tuberculosis purely on the findings of a complement fixation test, because the symptoms for which a patient presents himself may have little or no relation to his tuberculous process. We must consider the test merely as an additional symptom which may or may not be of value in arriving at a diagnosis in a given case.

I recently had occasion to review the literature on tuberculosis of the past few years and found only one clinician who, in the discussion of the diagnosis of tuberculosis, mentioned the complement fixation test. This, in view of the fact that for a period of at least two years the test has been on a dependable basis, seemed to me remarkable. What we need now is propaganda to impress on the clinician the value of this test and to teach him how to use it effectively.

Dr. H. J. Corper, Chicago: We have lived through periods when certain observers believed the complement fixation test in tuberculosis was equal to the Wassermann test. We have come now to a period when we seem to be agreeing better than before. In the beginning reports from Craig and Miller and Bronfenbrenner intimated that we did not need clinicians' findings. Petroff, who also at the beginning felt he could make an absolute diagnosis, recently admitted he erred a little on the side of positive results, probably because of his enthusiasm. Miss Lange, with Dr. Krause, obtained results which agreed well with those of Elizabeth Frazer, who was the first to compare the results obtained with a number of different bacillary antigens. Dr. Paul Lewis of Phipps Institute has tried any number of ways and antigens in an attempt to increase the percentage.

The sum total of the findings and conclusions of these observers can be stated briefly: That the complement fixation test in tuberculosis, varying slightly with different observers, does not give more than about 50 to 70 per cent. positive reactions, regardless of what antigen is used. In these experiments there were reported observations with Craig's, Miller's and Petroff's (multiple) antigens. Today tuberculosis workers feel that the complement fixation test in tuberculosis is not an absolute test; that its only value lies, as in most laboratory tests, in giving the clinician aid. The clinician must make a diagnosis with all the data at hand, both clinical and laboratory. Another striking point brought out revealed how cautious we must be in using this test. It is a fact that 10 per cent. of negative clinical cases of tuberculosis (normal individuals) will give positive complement fixation tests for tuberculosis. Therefore, we can only regard this test as a danger sign, and use it guardedly, indicating that the doctor must go further in his observations to see whether he can find anything else to corroborate the serologic diagnosis. It is not as reliable as the Wassermann reaction.

Dr. R. B. H. Gradwohl, St. Louis: My personal experience with this test has been fairly extensive. I have taken the precaution of working with a number of different antigens made by different men and preferably furnished by the men who recommend it. My experience with the test in advanced cases (and it has been the advanced cases with which I have worked particularly—I have not had the opportunity to get hold of many beginning cases) has given, averaging about five antigens, a very low percentage of positives—I think fifty or lower, at least in advanced tuberculosis.

In the last six months I have been working with all of Petroff's antigens, and there is quite a disagreement at times between the results of his antigens. My best results have been with Petroff's glycerin extract, which is quite stable and reliable. Up to the time Petroff was good enough to furnish me with this last antigen, Miller's antigen had been the best. I emphatically oppose the statements of those clinical and laboratory men who have stated that this test can be used as a criterion of arrest of a tuberculous process. It is a valuable test for diagnostic purposes in incipient cases; it has a definite value when negative, but a negative result can neither exclude tuberculosis nor can it prove an "arrest" of the process. The test has a great value within these limitations.

Dr. Carl C. Warden, Ann Arbor, Mich.: I want to ask Dr. Moon two questions. He said that the readings were taken after one-half hour's time. Is that right?

Did hemolysis take place on standing with those reactions which were at that time positive? Did he use as antigen any suspensions of organisms other than the tubercle bacillus?

I ask these questions for this reason: I worked with these tuberculous antigens for a year—antigens prepared by the methods described and many others, including the fat antigens. When we got through we came to the conclusion that while it was possible to produce antibodies in the blood of animals by experimental inoculations there was nothing to show that antibody is present in the human individual at any time during the course of the disease.

The pathology of the disease tends to support this question because the response of the human body to the invasion of the tubercle bacilli is a process wholly different from that of other invasions. We have obtained just as good reactions with suspensions of anthrax bacilli, with an organism obtained from scarlet fever patients, and particularly with lepra bacilli, as we did from any of the tubercle bacilli we used.

Dr. V. H. Moon, Indianapolis: I have had no opportunity to conduct experiments with animals. The experience I cited of Dr. Bronfenbrenner seemed to point to the fact that the animals form antibodies against the tubercle bacilli very early and that late in the course of the disease, as it approaches a fatal termination of the infection, the antibodies disappear.

As to details for the preparation of the antigen, I followed quite closely Dr. Miller's published account of the preparation of it. I used fresh virulent young organisms from twelve different strains of human bacilli and four strains of the bovine type. These were desiccated with salt and then pulverized by grinding. This antigen had fine keeping qualities and I was falsely led to think that it was a very desirable antigen. But it is not so sensitive as that prepared from the freshly grown bacilli without desiccation.

As to the consideration of the amount of evidence or the amount of significance which should be placed on the positive test: We should not regard this as definite evidence that the patient is suffering markedly from tuberculosis any more than we should consider a positive Wassermann test as indicative that the patient is suffering from syphilis. The syphilitic is not immune to the other ills to which the flesh is heir. A man may have other ailments as readily as if he did not have syphilis. If a doctor should ask you to make a Wassermann test in a case and should base his entire diagnosis on your positive Wassermann he might think a patient who was about to die of typhoid was purely a syphilitic. The situation is entirely similar regarding complement fixation in tuberculosis. I agree with the statement that we cannot place absolute reliance on it. But I am convinced that this test will give a much higher percentage of positive results than the figure mentioned by Dr. Corper. A certain percentage of apparently normal persons may give a positive test. As evidence of this I cited the twelve out of 100 medical students who reacted positively. Two of them did show evidence which might be regarded as suspicious of tuberculosis, but it would not be fair to send the remaining ten to the West or the South on a diagnosis of tuberculosis on the strength of this test. This test is merely evidence which the clinician shall weigh in correct proportion with other evidence in making his diagnosis. If he is suspicious of a case as being one of early tuberculosis, if he secures a positive complement fixation test he will have additional suspicion that his case may be one of tuberculosis, but he will not have absolute evidence. We may regard it as absolute if we find the tubercle bacilli in the sputum. That, of course, is a higher grade of evidence than any evidence which may be obtained from serum tests.

I have not tried as antigens bacteria of any other varieties, such as the colon bacillus or the *Bacillus subtilis*. I tested only for antibodies against the tuberculosis antigen.

As to incubation period, I was misunderstood. In making the test, an hour incubation period before adding amboceptor and corpuscles, and an hour incubation after adding the amboceptor and corpuscles was the method followed regularly.

I may answer Dr. Warden's question by saying that occasionally tests were slightly positive in thirty minutes which later cleared up. Usually the result was the same after thirty minutes' reading as it would be at the end of the hour. My readings were all taken at the end of an hour.

Nutritive Value of Dried Milk.—The growth curves of children fed exclusively on dried milk from birth closely resemble the average growth curve of breast-fed children, although at somewhat lower levels by reason of the more delicate condition of these children. The conclusion is reached "that cow's milk, during the process of desiccation, loses none of the characters which are necessary for the support of normal growth in infants." Teething and walking begin at normal ages, and there is no greater liability of rickets and scurvy. The experiments on rats led to the conclusion that dried milk as a sole food maintains the animal in good health and permits normal growth for periods which long outlast those corresponding with infancy and early childhood in the human subject.—Food Report 24, Local Government Board.

Military Medicine and Surgery

ANTHRAX AT CAMP HANCOCK, GA.

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The possibility of the appearance of the skin manifestations of anthrax from time to time is admitted, and the necessity of having a clear idea of the classic picture of an anthrax pustule is therefore apparent.

In reporting three cases of anthrax occurring in this camp within four weeks, we hope to impress on the reader the distinguishing points in diagnosis, and the necessity for early treatment.

Anthrax is definable as a specific and highly contagious disease due to *Bacillus anthracis*.

Fortunately the organism never enters the unbroken skin, but gains entrance at the site of an abrasion. Any commercial animal product—hide, hair or wool—and the articles manufactured therefrom afford the source of contagion.

SYMPTOMS

The usual appearance of the skin manifestations of anthrax is as follows:

Following a period of incubation varying from one to five days, a small red papule appears at the site of abrasion, with symptoms of itching and burning, though these are sometimes absent.

After the lapse of from twelve to twenty-four hours, a small vesicle appears on the papule, surrounded by a red areola and edema. The vesicle ruptures in from two to four hours, its site being marked by a small ulcer exuding a small amount of clear serum.

After from twelve to twenty-four hours, the crater of the ulcer will harbor a carbon-like (coal-like) eschar. Numerous vesicles appear on the edge of the crater.

The classic picture, therefore, would show a black eschar lying in a crater surrounded by vesicles—a red areola and an edema usually out of proportion to the size of the lesion. Some of these symptoms may be wanting, but the black eschar is always present and is diagnostic. The lymphatic glands draining this area are usually greatly swollen.

The subjective symptoms are malaise, fever, headache, prostration, and slight itching or burning at the site of the lesion.

The objective symptoms are early weak, rapid and intermittent pulse; a rise in temperature varying from normal to 105; occasional vomiting and diarrhea; occasional signs of fluid in the abdomen or pleural cavity; early cyanosis, and delirium usually absent or late. Death may, however, suddenly intervene, the symptoms being disproportionate to the gravity of the case.

The "edema maligna" of anthrax occurring about the eyes, lips or neck is characterized by diffuse, painless, semitransparent edema, with vesicles appearing on the surface, some often containing blood. These, however, rapidly disintegrate, and the carbon-like eschar appears. Constitutional symptoms are early and correspondingly fatal.

DIAGNOSIS

The diagnostic points are:

1. Carbon-like eschar from 1 to 3 cm. in diameter, reposing in a crater bordered by numerous vesicles surrounded by a red areola and considerable edema.
2. Absence of suppuration and pain.
3. Systemic symptoms—malaise, headache, fever, prostration.
4. The finding of the *Bacillus anthracis* in the vesicles or edema about the lesion, or the appearance of the organism in films taken from beneath the eschar.
5. The occurrence of a lesion on parts of the body habitually uncovered. These will serve to differentiate anthrax from furuncle, folliclis, carbuncle, chancre, granuloma pyogenicum, phenol or cautery burns and poison wounds.
6. The absence of pain, a diffuse, semitransparent edema covered with vesicles filled with blood or the ulcer harboring the carbon-like eschar, and the finding of *Bacillus anthracis* will differentiate the edema maligna of anthrax from phlegmonous erysipelas, cellulitis or angioneurotic edema.

TREATMENT

As soon as the diagnosis is clinically established and films and cultures have been made, the following procedure should be immediately instituted:

1. The tissues about the lesion should be infiltrated with from 30 to 50 c.c. of antianthrax serum, a large needle and Lüer syringe being used.
2. The lesion should be dissected, a nose cautery being used, and an effort made to remain at least one-half inch from its border.
3. Seventy-five c.c. of antianthrax serum with 50 c.c. of physiologic sodium chlorid solution, should be given intravenously.
4. Seventy-five c.c. of antianthrax serum should be given intramuscularly.
5. The wound should be dressed once in twenty-four hours with a solution of phenol (carbolic acid), 3 parts; camphor, 7 parts; glycerin, 40 parts, and alcohol, 180 parts.
6. The serum therapy should be repeated every eight hours, according as circumstances may require.

REPORT OF CASES

Case 1.—A soldier, admitted, June 7, 1918, noticed a small pimple on the left cheek, June 4. He used a new shaving brush, June 2, and his razor caused an abrasion. June 6, the lesion had increased in size and was described by the patient as a sore with a black center.

June 7, on admission, he complained of headache, fever, malaise and a feeling of dizziness and prostration, which symptoms were the reason for his admission. The temperature at 2 p. m. was 101.2, the pulse, 98. At 4 p. m. the temperature was 104.6 and the pulse, 120. The pulse was fair in volume but intermittent. At 7 p. m. after the laboratory examination had been made the patient was given ether anesthesia, the ulcer was cauterized, and the whole area was excised, the excision going wide of the border of the lesion. The wound was not closed and was dressed with neutral solution of chlorinated soda. No antianthrax serum was obtainable, so 60 c.c. of horse serum with a like amount of physiologic sodium chlorid solution was given intravenously.

June 8, at 8 a. m., an abdominal examination revealed free fluid, and an examination of the chest revealed beginning edema of both lungs. At 4 p. m. the fluid in the abdomen had greatly increased. The temperature was 97.6, the pulse, 160, weak and intermittent, and unaffected by digitalin. At 8 p. m. the patient developed a low type of delirium.

June 9, at 2:15 a. m., the patient died.

Case 2.—A soldier, admitted, June 19, 1918, presented the subjective symptoms of frontal headache, malaise, fever, dizziness and extreme prostration. The temperature was 99.8, and the pulse, 96. No anthrax lesion was noted by the patient or the attendant at the time of admission.

From June 20 to June 22, the symptoms were the same.

June 22, a blister on the side of the neck was noticed. The temperature was 101.4 and the pulse, 88.

June 23, the patient felt a pain in the neck and noticed glandular enlargement in addition to the appearance of an ulcer at the site of the blister of the previous day. A clinical diagnosis of anthrax was made and confirmed by laboratory findings. The temperature was 101.8 and the pulse, 84. At noon, the area about the lesion was infiltrated with 50 c.c. of antianthrax serum, a large needle and a Lüer syringe being used; under ethyl chlorid general anesthesia the lesion was dissected with a nose cautery and the base seared with the cautery, with no bleeding. The wound was dressed with a solution of camphor, phenol and alcohol. Fifty c.c. of antianthrax serum, together with a like amount of physiologic sodium chlorid solution, were given intravenously. At 4 p. m. the axillary temperature was 103.2 and the pulse, 96. At 8 p. m. the temperature was 101 and the pulse, 104.

June 23, at 8 p. m., 50 c.c. of antianthrax serum with 50 c.c. of physiologic sodium chlorid solution were given intravenously.

June 24, at 11 a. m., the temperature was 100.4 and the pulse, 96. Fifty c.c. of antianthrax serum were given intravenously into the gluteal region. At 5 p. m. the temperature was 100 and the pulse, 86. Fifty c.c. of antianthrax serum were given intramuscularly.

June 25, at 9 a. m., the temperature was 98.4, the pulse, 80 and the respirations, 24. Fifty c.c. of antianthrax serum were given intramuscularly.

June 26, no further treatment was given except local treatment. At 9 a. m. the temperature was 98, the pulse, 62; at 9 p. m., 98 and 60.

June 27, at 9 a. m. the temperature was 97.4, the pulse, 50; at 9 p. m., 98 and 52.

June 28, at 9 a. m. the temperature was 97, the pulse, 58; at 9 p. m., 97.4 and 52.

June 29, at 9 a. m. the temperature was 97.4, the pulse, 50; at 9 p. m., 97 and 60.

June 30, at 9 a. m. the temperature was 98.4, the pulse, 60; at 9 p. m., 98 and 60.

July 1, at 9 a. m. the temperature was 98, the pulse, 60; at 9 p. m., 98 and 60.

July 7, the wound was healed in the normal manner. This patient was not at any time delirious. He was nauseated only the first day, and showed no reaction from serum therapy.

His recovery is believed due to the early use of antianthrax serum and the manner in which the lesion was removed.

Case 3.—A soldier, admitted, July 3, 1918, had accidentally cut his right cheek while shaving on the morning of June 30. He had been using a new brush.

July 1, the patient noticed a papule at the site of the cut.

July 2, as stated by the patient, the papule had appreciably increased in size, associated with swelling in the neck.

July 3, the lesion showed a black area in its center. The patient stated that he felt tired, and that he went on sick call because he was worried concerning the rapidly growing ulcer on his cheek. On admission, at 10:20 a. m., the temperature was 100, the pulse, 100. The patient complained of headache, dizziness and nausea. The lesion on the right cheek was one-half inch in diameter and was surrounded by numerous vesicles; in the center was a black eschar. The tissues of the right side of the neck showed considerable tumefaction. The patient did not complain of any pain at the site of the lesion. At 1:15 p. m. the tissues surrounding the lesion were infiltrated with antianthrax serum, and the lesion dissected with a nose cautery. The base was cauterized. This was done under ethyl chlorid general anesthesia. Seventy-five c.c. of antianthrax serum, with 50 c.c. of physiologic sodium chlorid solution were given intravenously. Seventy-five c.c. of antianthrax serum were given intramuscularly into the gluteal region. The wound was dressed with phenol and camphor solution. The temperature was 101.2 and the pulse, 84, at 10 p. m.

July 4, 75 c.c. of antianthrax serum and 50 c.c. of physiologic sodium chlorid solution were given intravenously. Fifty c.c. of antianthrax serum were given intramuscularly. At 9 a. m. the temperature was 97.6, the pulse, 80; at 9 p. m., 100 and 84.

July 5, 50 c.c. of antianthrax serum were given intramuscularly. At 9 a. m. the temperature was 99, the pulse, 82; at 9 p. m., 99 and 74.

July 6, at 9 a. m. the temperature was 97, the pulse, 68; at 9 p. m., 97.6 and 60.

July 7, at 9 a. m. the temperature was 96.6, the pulse, 60; at 9 p. m., 97 and 68.

July 10, the wound was granulating in the normal manner. The pulse still continued to be around 68, but was of good volume, and the patient had no subjective symptoms of any kind.

BACTERIOLOGIC DIAGNOSIS

In view of the ruling of the Surgeon-General of the Army, that diseases of known bacterial origin cannot be diagnosed as such by the clinician until his provisional diagnosis has been confirmed bacteriologically, Case 1 is of interest because of the difficulty encountered in making a positive bacteriologic diagnosis of infection by the anthrax bacillus.

A few hours after the patient had been admitted to the hospital, several films were made from the serum exuding from the vesicles about the circumference of the lesion, but no organisms resembling *B. anthracis* were seen. It was only after the gangrenous central area had been raised by means of forceps and smears made from the underlying tissue that an organism similar to the anthrax bacillus was found. This bacillus was gram-positive and occurred in chains of two or three, the average size being 1 by 7 microns, a few measuring 1.5 by 2.5 microns. The ends of the bacilli were square, and a few appeared to show slight cupping. One or two centrally placed spores were seen. A number of gram-negative, coccoid bacilli and a few pus cells were also seen. Cultures were made on plain and blood agar at the same time that the direct films were prepared. A blood culture was made at this time.

Twelve hours later the cultures made from the lesion were examined, and a large number of gram-negative coccoid bacilli with central nonstaining areas were seen. A large number of the gram-positive bacilli were also present. The majority of the latter were in long chains, the average size being 1 by 4 microns. Very few of these organisms had square ends; the majority were rounded. No spores were seen at this time, but twelve hours later they appeared in large number. An emulsion of the mixed culture was plated for the purpose of obtaining the various organisms in pure culture. No growth was obtained in the blood culture after seventy-two hours' incubation.

Morphologically and culturally, the gram-positive bacillus corresponded to *B. anthracis*, the absence of motility in the hanging drop, the inverted fir-tree appearance of the growth in stab agar cultures, the Medusa head appearance of the colony on agar, etc., being typical. Suspensions of the bacteria in physiologic sodium chlorid solution were boiled for varying periods of time, and the emulsion then plated. It was found that two minutes' boiling was required to kill all organisms in a twenty-four hour culture containing spores.

In determining the degree of pathogenicity of the bacillus, a total of seven animals were used. The results are given in the accompanying table.

In view of the pathogenicity of the organism and its marked similarity to the anthrax bacillus, the clinical diagnosis of infection by *B. anthracis* was confirmed.

No necropsy was performed, but several splenic punctures were made several hours after death with negative results, no anthrax bacilli being found in films or culture. The undertaker reported that on opening the peritoneal cavity a fairly large amount of clear, light brown fluid was found. A firm, dark colored tumor, 4 by 8 cm. in size was found attached to the mesentery of the small intestine. Microscopic examination of sections demonstrated it to be a partially organized blood clot.

PATHOGENICITY OF BACILLUS

Animal	Inoculating Material and Site of Injection	Result
White Rat 1..	Serum from lesion; intraperitoneal injection	No visible effects; animal still living
Guinea-Pig 1..	1.5 c.c. of 12 hour mixed culture* from lesion; intraperitoneal injection	Death after 80 hours; hemorrhagic condition of muscles of thorax and abdomen, viscera somewhat congested; cultures from abdominal muscles and all organs showed motile, gram-negative, coccoid bacilli with central nonstaining area; no anthrax bacilli were present in films from organs or culture; organism responsible for death was a bacillus of the hemorrhagic septicemia group
White Rat 2..	1 c.c. of 24 hour mixed culture* from lesion, second on agar; injected in tail	No visible effects; animal still living
Rabbit 1	1.5 c.c. of 24 hour mixed culture* from lesion; intraperitoneal injection (8 hours prior to injection, 10 c.c. of blood were removed by cardiac puncture)	Death in 2 hours; necropsy 8 hours after death; cultures from all organs and a variety of bacteria were present; bacilli of the hemorrhagic septicemia group predominated; no anthrax bacilli were found in culture; primary cause of death was shock
Rabbit 2	1 c.c. of 24 hour mixed culture,* third on agar; subcutaneous and intraperitoneal injection	Death in 20 hours; peritonitis found at necropsy; bacilli of the hemorrhagic septicemia group were present in pure culture from all organs; death due to hemorrhagic septicemia
Guinea-Pig 2..	1 colony of gram-positive bacilli; subcutaneous injection in abdominal wall	Killed 25 hours after injection; pig was apparently in good health at time of death; muscles of thorax and abdomen were markedly edematous; no other macroscopic changes; pure culture of the same organism as injected obtained from all organs
Guinea-Pig 3..	Same as for Pig 2	48 hours after injection, animal semed to be in normal state of health; death 70 hours after inoculation; necropsy revealed a hemorrhagic and edematous condition of the abdominal muscles about the site of injection; peritoneal cavity contained blood-tinged fluid; pure cultures of the same organism as injected obtained from all organs

* Emulsion of growth on agar slant.

Cultures made of the bristles of the shaving brushes used by the patients were negative for anthrax bacilli.

In the Cases 2 and 3, no difficulty was encountered in making a bacteriologic diagnosis of anthrax infection, for the organisms isolated from the lesions were characteristic and were pathogenic for guinea-pigs, death occurring in twenty-three and twenty-nine hours, respectively.

CONCLUSION

The difficulty in confirming the clinical diagnosis of anthrax infection in the first case was due to two factors, (*a*) the use of animals (white rats) possessing a high degree of immunity to infection by *B.*

anthracis and (*b*) the presence in cultures from the facial lesion, which were used for inoculating purposes, of a bacillus of the hemorrhagic septicemia group, a rare coexisting organism possessing a marked degree of virulence for certain laboratory animals.

It is possible that the bacilli of the hemorrhagic septicemia group exert an antagonistic influence on the growth of *B. anthracis*, and possibly they accounted for the absence of anthrax bacilli in the animals that died of hemorrhagic septicemia. It was noted that the longer the two were grown together, the greater the disproportion between the two, the anthrax bacilli diminishing in number.

Therapeutics

EPIDEMIC INFLUENZA

Under various names, epidemics corresponding to epidemic influenza have occurred at irregular intervals since accurate descriptions have been made of disease. It is likely that at still earlier times this disease was combined and confused with other epidemic disorders, and so did not stand out as an entity until a relatively modern period. In early English literature this disease is spoken of under a variety of terms. Creighton[1] recognizes it under the name "ague," used by the British seventeenth century authors. In 1658, Cromwell died from this disease, when Morton says the country was "one vast hospital." The Italian term "influenza" first came to England in association with the epidemic of 1743, and it has been employed in connection with the great epidemics of 1833, 1847 and 1889-1890.

About 1712 the French term "la grippe" came into use and has been periodically revived ever since. The great pandemics usually originated in the Far East, and gradually extended westward. The rate of human travel and the degree of intercourse between various parts of the world determined the rapidity of the extension. Besides the great pandemics, scarcely a year has passed without local outbreaks which have been classed under the term "influenza." Whether these are identical with the more widespread epidemics it is impossible to say.

The severity of the disease has varied greatly; some epidemics are very mild; others have been severe. Influenza has embraced America in several pandemics. In his remarkable work on epidemic diseases, published in Hartford in 1799, Noah Webster locates the first American epidemic of which he could find an account in 1647. It passed through the whole country and extended to the West Indies. There were between 5,000 and 6,000 deaths in Barbados and St. Kitts. In 1655 a second severe epidemic occurred in America. Benjamin Rush described an epidemic in 1789 in Philadelphia, which was brought there by members of the first Congress, which had assembled in New York. Daniel Drake records a widespread epidemic in the West in 1807.

The history of epidemics of influenza does not differ so much from that of other diseases spread by human intercourse that are usually called contagious. A widespread epidemic follows the introduction of a specially virulent virus, and there follows a general immunity among those of the population who have been infected. As the epidemic dies out, the infection decreases in virulence and only sporadic cases occur. From such cases and probably chronic carriers, local outbreaks occur; but the general immunity prevents any general epidemic. After a period of years a new susceptible population has replaced the immune one, and with the introduction of a fresh virulent virus a general epidemic is again brought about. This would account for the great susceptibility of young persons, and as it is twenty-eight years since the last great epidemic, we should not expect many individuals above 30 years of age to be now affected.

CAUSATION

The causative agent of epidemic influenza has not been certainly recognized. The attachment of the name "influenza bacillus" to a small bacillus described by Pfeiffer in 1892 has been followed by its frequent reception as the actual specific agent. There is, however, much uncertainty as to its etiologic rôle. It is to be hoped that the study of the present epidemic may lead to some certain knowledge regarding the essential cause of the disease. This should enable us to determine whether the endemic cases and those of limited mild epidemics are really identical with the ones observed in the great periodic outbreaks.

COURSE OF THE DISEASE

The cases in the present epidemic begin usually quite suddenly with pain in the head, back, eyes, limbs and joints. With the pains there is great prostration, chilliness and a fever of from 101 to 104 F. The pulse does not become very rapid, and the patient often is drowsy. Vomiting may occur. Sometimes there may be diarrhea, but usually there is constipation. After the disease has become established the mucous membranes of the nose and throat become reddened, and there is sneezing and redness of the conjunctiva. Involvement of the larynx causing hoarseness, and of the bronchi causing cough are common. There is an associated leukopenia or a normal leukocyte count. A leukocytosis points to some complication. The fever gradually falls to normal after a few days and more or less prostration is present during convalescence. A transient albuminuria is frequent. Many of the cases have hemorrhages of the mucous membranes of the nose some of the urethra or bowel.

SECONDARY PNEUMONIA

Not infrequently a lobular pneumonia develops after a few days, and this is responsible for most of the fatalities. The pneumonia differs from the usual picture of pneumonia, in that the temperature may be very slight, and the pulse rate may give little indication of the gravity of the condition. These cases, instead of subsiding, may come down to practically normal temperature for twelve hours; then there may be a sharp rise in temperature, not followed by a chill, backache, boneache, headache or nausea.

About this time there may also be expectoration containing bright red blood. As a rule, twelve or twenty-four hours after the second rise of temperature on physical examination in the lower lung, in a preponderance of cases on the left side, as seen at

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[1] Creighton: History of Epidemics in Britain, 1894.

Great Lakes, small areas about the size of a silver dollar of typical pneumonic consolidation are found by auscultation. These areas may become marked so that by the second day of the second rise scattered through the lung, probably both lungs, ten or fifteen of these small areas may have appeared. In the epidemic at Great Lakes, if the patient did well these would gradually disappear. They did not resolve as a pneumonia would resolve. The clearing up of the lung after this in the recovered patients was remarkable as to its rapidity. Other cases went on to a typical lobar, massive consolidation, as far as the physical signs were concerned, with dulness, increase in fremitus, typical tubular voice and breathing and all the signs, except that there was not a very marked increase in the pulse rate, and the respirations were not up to this time markedly increased. Cases with almost complete consolidation of the lung, as to the lower lobes, with a temperature of 105, would have a pulse around 100, with respirations 24 or 26. There may be rapidly developing toxemia and vasomotor depression, with death of the patient resulting in many cases.

INCUBATION PERIOD

The incubation period in these influenzas is probably very short, but it is difficult to obtain accurate figures on this point. The disease is probably spread entirely by contact infection, the virus of the disease being disseminated for short distances through droplets driven into the air in coughing and sneezing. Circumstances which favor this means of spread, such as crowding in cars, favor the spread of the disease.

TREATMENT

The treatment of the disease is largely symptomatic. Acetylsalicylic acid or similar remedies may be required to relieve the pain. The acetylsalicylic acid may be given in a dosage of 1 gm. (15 grains) every three hours, as advised by Hewlett, or a smaller dose combined with 0.1 gm. (2 grains) of acetphenetidin, until symptomatic relief is secured. Warm baths may give relief, although in numerous cases seen at the Cook County Hospital hydrotherapeutic methods failed and were discarded. The mouth should be kept clean, and elimination stimulated by the free ingestion of water and hot drinks. The patient should be kept in bed in a well ventilated room until the fever has disappeared. Chilling should be avoided. The latter precautions will do much in avoiding the occurrence of complications.

When pneumonia develops, as indicated by moist râles in the base of the lungs, with or without dulness on percussion, the patient demands particular care. Every effort must be made to provide for an adequate intake of fluids, and for nourishment, which must be given in fluid form to a large extent. Warm packs are often useful, combined with the application of cold to the head. With any indication of failing heart, stimulants are indicated.

In the cases of secondary pneumonia, many of which result fatally, the chief conditions to be combated are the severe toxemia and the vasomotor depression. The toxemia may be combated by the usual methods, getting fluids into the body by mouth or proctoclysis or even by hypodermoclysis. Small doses of epinephrin may be given at the same time. The removal of the toxemia may be aided by securing elimination, giving large doses of salts, such as magnesium citrate, or by the giving of calomel. In severe cases, venesection may prove extremely valuable. If a marked cyanosis occurs, as is frequently the case, this may be combated by the use of oxygen by inhalation, perhaps according to the method devised by Meltzer,[1] or even as has been suggested by Dr. F. Tice, by injection of oxygen under the skin. The prostration is to be combated by the use of the usual stimulants, such as caffein and sodium benzoate, digitalis, strophanthus or camphorated oil, usually hypodermically. The final stages in this pneumonia are frequently a massive exudation into the lungs and bronchi. At the Great Lakes Naval Training Station efforts have been made to combat this by the use of morphin and large doses of atropin, in some cases as much as 0.0025 gm. or 1/25 grain, being used.

Specific measures are not available in the treatment of influenza. With certain identification of the causal agent, we may hope for some specific protective measures, and perhaps for some specific therapeutic serum.

In the absence of a specific virus to be used in immunizing animals, there remains but one source of a therapeutic serum at the present time. This is in the blood of persons recently recovered from the disease. It is quite probable that the blood of convalescent patients contains antibodies for the specific agent of the disease. It would be desirable to inject citrated convalescent blood into the muscles of patients with pneumonia at least. Naturally such blood should be known to give a negative Wassermann reaction. In view of the strikingly beneficial results from convalescent serum in scarlet fever secured by a number of observers, it seems reasonable to try this in influenzal pneumonia, especially as it is devoid of any harmful effects.

PROPHYLAXIS

The measures to be taken to prevent the spread of the disease comprise all those which interfere with the transfer of the infectious materials from the sick to the uninfected. This includes isolation of the patient, and the intelligent use of proper gauze masks by the attendant. In the time of an epidemic, prompt and efficient isolation of the first cases in a community could accomplish much. If this has been neglected and the infection has spread among the population, measures which prevent the coming together of numbers of persons in close quarters are to be employed. The desirability of closing schools in a large city in the presence of an epidemic is a measure of doubtful value. In smaller places this is more reasonable, and the danger of infection when children are outdoors should be less than when they are brought together in a schoolroom.

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[1] Meltzer, Samuel: The Therapeutic Value of Oral Rhythmic Insufflation of Oxygen, THE JOURNAL A. M. A., Oct. 6, 1917, p. 1150.

The Toll of Tuberculosis.—Though the sacrifice of lives in the present war has been so enormous as to make all previous losses on the battlefield appear slight in comparison, it nevertheless appears to be a fact that this frightful war mortality does not greatly exceed, and indeed may be exceeded by, the deaths from tuberculosis under ordinary conditions, if equal areas and periods be considered. In the four years since the war began, the total number of deaths from tuberculosis among the civilian population and in the armies of all the countries engaged has at least approximated the total number of soldiers killed in battle.—Dr. Livingston Farrand.

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SATURDAY, OCTOBER 5, 1918

THE INFLUENZA OUTBREAK

As set forth elsewhere in this issue,[1] widespread outbreaks of acute respiratory infection have occurred at irregular intervals for many centuries. The general clinical manifestations and the complications have been always practically the same. Owing to conditions that are far from being adequately understood, such infection now and again spreads over the world with great rapidity and in a manner that was altogether mysterious and disconcerting until we learned that it never spreads faster than human travel. It seems as if in the course of evolutionary processes there suddenly is liberated a form of infectious agent against which large numbers of people offer little or no resistance and which is transmitted readily from person to person under the most diverse hygienic and geographic circumstances. That the peculiarly subtile nature of these outbreaks was recognized long before the bacteriologic era is indicated by the introduction of the name influenza, which means, literally, influence. The question as to the real nature of this "influence," it must be acknowledged, is not settled definitely. The discovery by Pfeiffer in 1890, at the time of the last pandemic, of the influenza bacillus (*B. influenzae*) in the sputum and respiratory tract of influenza patients seemed, it is true, to have settled the matter. At any rate, Pfeiffer's claim that he had discovered the cause of influenza secured fairly general acceptance except possibly in France.

Since then, however, the influenza bacillus has been found to be present in practically all cases of whooping cough and in a large percentage of the cases of measles and scarlet fever, as well as in tuberculosis and chronic bronchitis. Minor epidemics of acute respiratory infection, clinically regarded as epidemics of influenza, have occurred in which the influenza bacillus was not present regularly in the sputum[2] or the respiratory tract. In such epidemics, as well as in the great pandemic of 1889-1890, streptococci and pneumococci occurred quite regularly in the respiratory tract; indeed, a large group of French and German investigators regarded the great pandemic as a streptococcus or mixed streptococcus and pneumococcus infection. We see that as a matter of fact the only evidence that influenza is caused by the influenza bacillus, up to the time of the present outbreak, is the demonstration by Pfeiffer and others of the presence of the bacillus among other bacteria in the respiratory tract of patients with influenza. The production of influenza in animals by injections of pure cultures of the bacillus has not given any decisive results. No distinctive immunologic reaction has been discovered, showing that the body reacts specifically to the influenza bacillus in the course of influenza. In truth, the evidence in favor of the influenza bacillus is not any stronger or different from that which can be urged in favor of the streptococcus, pneumococcus or other bacteria. And if we grant the possibility that the influenza bacillus may cause outbreaks of influenza, wherein lies the deep difference between such strains of the bacillus and the strains found in whooping cough, measles and other conditions?

The "influence" in influenza is still veiled in mystery. It is also too early to consider in detail the outcome of the etiologic investigations of the present outbreak; already contradictory results have been recorded, and for the present we await further developments. We may anticipate, however, highly valuable and interesting contributions when the full observations on the outbreaks at the Great Lakes Naval Training Station and other military camps, as well as in civil groups, are published. The recent remarkable work on the spread and prevention by selective isolation of streptococcus bronchopneumonia in measles and other conditions in our Army camps sets a fine example, which we believe will be duplicated in connection with influenza.

THE DEFENSE OF CORN AS A WAR TIME FOOD

The United States Food Administration, as we have pointed out, has been particularly careful to fortify its pronouncements and dietary admonitions by reference to the judgment of scientific experts, and has frankly stated that so far as nutritional value is concerned it makes practically no difference whether we eat wheat or oats, rye or barley. Wheat flour, which people are asked to conserve, has just one advantage over the other cereals: it can be made into lighter and more durable bread.

Since our entry into the war, corn has become the most important and popular substitutive cereal. The mill products of maize are rapidly obtaining vogue in the nutrition of large numbers of our population. The value of dependable information is thus manifoldly emphasized. It may rightly be admitted that the maize kernel, by itself, is by no means an adequate or complete food. If we except milk, few individual foods are sufficiently perfect in chemical make-up to satisfy the definition of an adequate diet. Neither sugar nor butter are all sufficient foods when used alone, and no one possessing the rudiments of physiologic education regards them as such. Since it has been learned that corn contains a considerable proportion of a protein which is unquestionably inadequate as the sole source of nitrogen to the organism, this cereal has acquired an unintended reputation of dietary inferiority.

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[1] Epidemic Influenza, Therapeutics Department, this issue, p. 1136.

[2] Mathers, George: Etiology of the Epidemic Acute Respiratory Infections Commonly Called Influenza, Proc. Inst. Med. Chicago, 1916, 1, 84; Bacteriology of Acute Epidemic Respiratory Infections Commonly Called Influenza, Jour. Infect. Dis., 1917, **21**, 1.

But corn contains more than one protein, and the true value of its combination can be ascertained only by physiologic studies with the products of the entire kernel as it is popularly used, rather than by feeding experiments with isolated proteins. We have already referred to the experiments of Sherman, Wheeler and Yates[1] indicating that the substitution of maize protein for that of wheat to the extent of from one fifth to one third of the total protein intake was found to be without unfavorable effect on the nitrogen balance, whether the test was made by abrupt substitution in a low protein diet, or by ability to maintain equilibrium for a long time on a low protein diet of which the protein was largely that of corn meal. In each of these cases there was some discomfort of digestion attributed at the time to the unaccustomed use of relatively large quantities of corn meal, but perhaps at least equally attributable to the fact that the diet as a whole was too bulky and too starchy for the summer weather in which the experiments were performed.

In later experiments, likewise conducted in Professor Sherman's laboratory at Columbia University,[2] New York, corn meal replaced all other starchy food and actually furnished from 73 to 97 per cent. of the total nitrogen intake. The investigators found that, in the maintenance metabolism, the efficiency of the maize protein was about the same as that reported for the prized wheat. Nitrogen equilibrium was maintained over long experimental periods with a low protein intake, the largest part of which consisted of maize protein. This must not be construed into an argument for the exclusive use of such protein in the dietary of growth, whether it be during adolescence, pregnancy or lactation. It is more than likely that small supplements of other protein foods will greatly enhance the value of the diet. But the lesson of this investigation will be properly presented by quoting in part Sherman's conclusion that certainly one need not hesitate on the score of the protein intake to substitute maize products entirely for the corresponding products of wheat, even when these make up the main part of the food supply. Physicians need to be armed with such opinions when their can't-eat-substitutes-for-wheat patients importune them.

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[1] Corn in the War Time Dietary, editorial, THE JOURNAL A. M. A., June 15, 1918, p. 1865.

[2] Sherman, H. C., and Winters, J. C.: Efficiency of Maize Protein in Adult Human Nutrition, Jour. Biol. Chem., 1918, **35**, 301.

THE REGULATION OF BODY TEMPERATURE

It requires little analysis to discern that the temperature of an object represents the resultant of two factors: the gain of heat from without or within and the loss of heat. The body temperature of an animal may therefore be conceived to represent a balance between heat production and heat dissipation. In some organisms which we term cold-blooded animals, like the frog, the temperature of the body is ordinarily only slightly higher, at most, than that of their environment. Among the so-called warm-blooded animals, including man, on the other hand, the balance is so adjusted that it remains fairly constant for the individuals and the species, despite wide variations in the temperature of their surroundings.

To account for this unique regulatory phenomenon it has become popular within recent years to assume the existence of a special "center" which acts analogously to a thermoregulator. To recall the various precise locations of this hypothetic spot in the central nervous system, which have been postulated since the classic experiments of Aronsohn and Sachs in 1885 on "heat puncture," would take us too far astray in the fields of physiologic literature. Latterly the complications of uncertain location have been increased by the claim of a duality of mechanisms—a thermogenic or heat center and a thermolytic or cold center in the midbrain. The difficulties of those who defend the existence of such well defined heat-regulatory centers are augmented by the fact that any form of experimental stimulation which results in an increase in muscular activity thereby produces an otherwise explicable augmentation of heat; furthermore, the advocates of heat centers have found it difficult to account for the often repeated assertions of experimentalists that large portions of the postulated brain areas can be removed without consequent loss of temperature regulation.

Thus the problem under consideration has been left in great uncertainty—in that state in which textbooks marshal the significant evidence for and against a hypothesis and leave to the reader the discovery of the true solution. In such cases the only hope of success lies in the acquisition of new facts such as have recently been contributed by Lillian M. Moore[1] from the Spreckels Physiological Laboratory of the University of California. She has directed her attention to the corpora striata, the favored location of the centers. Puncture of this portion of the brain, the classic method of stimulation, was not attended by hyperthermia in more than a few cases out of many trials. Furthermore, she found that after removal of the caudate nucleus in rabbits and the cerebral hemispheres in pigeons—both warm-blooded species—a normal body temperature still was maintained. Evidently, then, the corpora striata are not essential for the maintenance of a constant body temperature. As this research offers no confirmation of the existence of special "heat centers" in the brain we may well ask whether the regulation of temperature is perhaps accomplished in some way analogous to that of blood pressure reaction, osmotic pressures, etc., in the organism. The uniform behaviors of these are not ascribed to specific centers, but have been attributed to equilibrium reactions involving physicochemical phenomena. The correct solution of the question of temperature regulation is of more than academic interest to the physician who is desirous of understanding the scientific basis underlying his use of antipyretic drugs as well as the genesis of fevers.

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[1] Moore, Lillian M.: Experimental Studies on the Regulation of Body Temperature, I, Normal Temperature Variations and the Temperature Effects of Operative Procedures, Am. Jour. Physiol., 1918, **46**, 24; II, Relation of the Corpus Striatum to the Regulation of Body Temperature, ibid., 1918, **46**, 253.

THE SIGNIFICANCE OF URINARY AMMONIA

Among the nitrogenous constituents of the urine, derivatives of ammonia are practically always present. Under normal conditions the quantity of ammonia thus eliminated by a healthy adult is not large; it usually amounts to less than half a gram per day. In certain diseased states, however, multiples of this quantity may be found in the urine. We do not refer here to the ammoniacal urines that result from bacterial decomposition of urea in the bladder and genito-urinary passages, but rather to a metabolic component directly secreted by the kidneys.

There was a time, not many years ago, when this ammonia in the urine was looked on as the result of a pathologic disturbance in urea formation. In consequence of the deaminization of amino-acid complexes, ammonia is presumably continually being formed in the body and promptly synthesized into the characteristic final end-product of nitrogenous metabolism, urea. It is easy enough to suppose that an upset in the later stage would leave the precursor of urea to be eliminated as such. A growing mass of experimental evidence has made it seem more than doubtful whether the urea-forming function is ever so severely impaired. Indeed, it appears to be efficient under many tested conditions of severe tissue damage. A better explanation of the appearance of ammonia has been afforded by the indication that it serves to neutralize acid either formed in the body by metabolic processes or introduced as such.

A classic research by Janney[1] has made it probable that the ammonia in the urine has as its sole function the neutralization of acid products and ceases to be formed in the presence of an excess of fixed alkali. He gave sodium bicarbonate or citrate to men and found that the quantity of ammonia in the urine was reduced to almost undeterminable traces. If any doubt as to the significance of the results remains, it must be dispelled by the latest contribution to this subject. Denis and Minot[2] of the Massachusetts General Hospital have found that it is not possible in normal subjects to obtain urines absolutely ammonia-free by the long continued administration of alkalis. But when the test is made on nephritics under comparable conditions of diet, even the last traces of ammonia disappear. Evidently the nephritics retain the drug for a longer time, thus allowing the alkali more time to exert its neutralizing effects. This is substantiated by the actually demonstrated lag in the excretion of the excess of the carbonate. As further indication of the rôle of acids formed in the metabolism of protein, it was observed by Denis and Minot that during periods of high protein feeding less than 50 per cent. of the ingested alkali was recovered, whereas after diets lower in protein the percentage of recovered bicarbonate amounted to nearly 90. There is no reason today for believing otherwise than that the sole function of the ammonia found in the (undecomposed) urine lies in the neutralization of acids arising during the normal metabolic process.

Current Comment

FOOD CONSERVATION FOR 1918-1919

Mr. Hoover, as food administrator, has given our allies the notable message of President Wilson, telling them that we will eat this year at a common table with them, and has pledged the American people to add an additional 5,000,000 tons to the 10,000,000 tons we sent last year, or 15,000,000 tons in all. We are to eat a common war bread with them made with a 20 per cent. substitution of flours from other grains mixed with that from wheat. The people of France, Great Britain and Italy have learned how to use substitutes so well that we can send them our quota from any of our durable foods. The bountiful wheat harvest will meet the present war needs and permit of the storage of a reserve for emergencies or against a short crop next year if we are all wise and careful. We dare not again see the national flour barrel as it was last summer when, just before the new crop came in, we had only ten days' supply in the country. Our margins must not be so narrow hereafter, particularly as we decrease our productive man power to build up the Army. Conservation for the coming year, aside from sugar, will probably be less dramatic than last year with its "wheatless days" and "meatless days," but it will have to be even more intense than before. All must reduce their intake to the physiologic limit that permits of the necessary hard war work. There must be no waste, less must be bought and less consumed, and the clean plate of our New England ancestors must again be the symbol of American thrift and American endeavor to serve by saving. Physicians must needs more and more advise their patients as to the use of foods and of the amounts actually needed for health. They can become active and sane exponents of the national food conservation program. The great results from the voluntary savings of the past year show the high intelligence and sensitive conscience of the American people. The majority of them need only to be told what to do. With our allies and ourselves at the common table, with the gross division of our food supplies based on the fundamental needs of the body in calories, the physician, reaching as he does into innumerable homes, has a new and inspiring opportunity for that guidance that should be his right because of superior knowledge.

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[1] Janney, N. W.: Ztschr. f. physiol. Chem., 1910-1911, 76, 99.

[2] Denis, W., and Minot, A. S.: Ammonia Excretion as Influenced by Alkalis, Jour. Biol. Chem., 1918, 35, 101.

THE PROPAGANDA OF THE V. M. S. C.

The latest Press Bulletin issued by the Volunteer Medical Service Corps, just received, consists of a letter of transmittal, "To the Editor," signed by the Assistant Secretary of the General Medical Board; an "Official Announcement" from the President of the V. M. S. C. and the Chairman of the General Medical Board; and five foolscap pages in the form of questions and answers concerning the V. M. S. C. This Bulletin seems to have been issued to emphasize what the name of the organization indicates—that is, that this society is purely voluntary. To quote from the "Official Announcement":

> No official or committeemen representing the Volunteer Medical Service Corps or the General Medical Board of the Council of National Defense is now authorized or has been authorized to favor any organized or unorganized method of coercion in inducing members of the medical profession to join the Medical Corps of the Army or Navy, or the Volunteer Medical Service Corps. Our committeemen are especially urged against favoring any movement that would threaten to impair a medical man's standing in his local, state or national society because he refused to enroll in the Army or Navy, or the Volunteer Medical Service Corps.
>
> It must be made clear that the Volunteer Medical Service Corps is a volunteer organization which has for its object the enrolment and classification of the profession.

The Journal is glad that there is to be a change in the propaganda in the procedure of building up this organization. Our profession is no longer to be threatened and coerced into it, as has been the case, especially during the more recent "drive" since the reorganization on August 2. Not only have physicians been threatened with having their names published in the newspapers, thus publicly branding them as "slackers," but the methods of promotion of this society finally reached the stage in which physicians who were not commissioned and who did not join this organization were threatened with loss of membership in county societies.[1] The medical profession is to be congratulated that these coercive measures are no longer to be employed. The general and hearty response of physicians from the time we entered the war to every call for the service should have forbidden the employment of measures which reflect on our profession and which the V. M. S. C. itself is now forced to decry.

UNCERTAINTY REGARDING PREMEDICAL STUDENTS

There is considerable confusion in colleges and universities regarding the courses for premedical students, but definite instructions on this point have not as yet been sent out. Paragraph 3 of the circular letter from the Committee on Education and Special Training, of August 28, specifically says that "the student soldiers will be given military instruction under officers of the Army and will be kept under observation and test to determine their qualification as officer-candidates, and technical experts such as engineers, chemists and doctors." This indicates that the committee had not forgotten the importance of safeguarding the supply of physicians. The circular letter in regard to curricula, however, makes no provision for premedical education. Five programs of instruction were prescribed, these being to prepare students for the five following services: A, Infantry, Field Artillery and Heavy Coast Artillery; B, Air Service; C, Ordnance Corps and Quartermaster Corps; D, Engineer Corps, Signal Corps, and Chemical Welfare Service, and E, Transport Service and Tank Service. Program D, which was arranged for engineers, the signal corps and chemical welfare service, might readily provide also for premedical education if the Committee on Education and Special Training would permit it. If special instructions are intended regarding premedical students they should be issued at the earliest possible moment. Otherwise premedical students will be forced to enter one of the five forms of service referred to above and confusion may result.

THE ORIGIN OF CERTAIN ANEURYSMS

It has been noted as a seemingly remarkable result in studies of experimental pathology conducted by Halsted[1] at the Johns Hopkins Medical School that, after constriction of large arteries in suitable degree by metal bands, a dilatation of the blood vessel occurs distal to the obstruction rather than proximal to it and where it might have been expected. Halsted believes that this helps to explain in a measure the not uncommon occurrence of aneurysms of the subclavian artery distal to a cervical rib. In an analysis of 525 clinical cases of cervical rib, 106 were found in which the subclavian had been compressed; and in twenty-one of these, aneurysm or dilatation of this vessel distal to the site of constriction had been noted. The attempts to explain the phenomenon have assumed as a possible cause either weakening of the wall of the artery from erosion by the rib, variable or intermittent pulse pressure occasioned by the normal excursions of the arm, or vasomotor or vasa vasorum disturbances leading to modified nutritional conditions in the wall of the vessel. Halsted is inclined to reject these explanations. He believes that what he describes as the abnormal, whirlpool-like play of the blood in the relatively dead pocket just below the site of the constriction, and the lowered pulse pressure may be the chief factors concerned in the production of the dilatation. The validity of this conclusion must be established before a rational method of cure can be instituted in the management of such aneurysms.

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[1] As an illustration the following notice appears in the Bulletin of the Buchanan (Missouri) County Medical Society, Sept. 17, 1918:

Notice is hereby given that at the coming meeting of the society the following resolution will be introduced in accordance with request from the National Council of Defense, Medical Section.

Resolved that, (a) After November 1, 1918, applicants for membership in the Buchanan County Medical Society shall be rejected unless they are members of the Medical Reserve Corps of the Army or Navy, or of the Volunteer Medical Service Corps.

(b) The membership of any physician in this society who is not a member of the M. R. C. of the Army or Navy, or of the V. M. S. C. shall terminate as soon after Nov. 1, 1918, as his membership for the current year expires.

[1] Halsted, W. S.: Dilation of the Great Arteries Distal to Partially Occluding Bands, Proc. Nat. Acad. Sc., 1918, 4, 204.

Medical Mobilization and the War

Work of Advisory Boards

A telegram addressed to all draft executives calls attention of Local Boards to Section 123 as amended and as appearing in the second edition of the Selective Service Regulations and to the fact that a registrant no longer has the right or privilege of applying to be sent to a Medical Advisory Board.

Women Physicians Wanted for Anesthetic Service

Dr. F. H. McMechan, secretary of the Interstate Anesthetists and the American Anesthetists, Avon Lake, Ohio, states that he is authorized to secure qualified women physicians under 45 years of age as anesthetists for war service. Women physicians desiring to enter this service may communicate directly with Dr. McMechan.

Gas Hospital Unit Starts for France

The first hospital unit designed exclusively for gassed victims has started recently for France. This unit is the unit of the Women's Overseas Hospitals. The chief of the medical staff is Dr. Marie Louise Lefort, New York City, and with her are associated Dr. Adah McMahan, Lafayette, Ind., Dr. Irene M. Morse, Clinton, Mass., Dr. Elizabeth A. Bruyn, Brooklyn, and Dr. Alice M. Flood, New York City. The hospital has accommodation for 300 patients, the equipment is mobile, and has for its immediate needs, two ambulances, one 3-ton truck and one 2-ton truck.

Division Surgeons Appointed

Lieut.-Col. William T. Cade, Jr., has been appointed division surgeon at Camp Sherman, Chillicothe, Ohio; Major William W. Pretts has been appointed sanitary inspector, and Lieut. Harry H. Sumner, assistant to the division surgeon.

Lieut.-Col. James F. Johnston has been appointed division surgeon at Camp Wadsworth, Spartanburg, S. C.; Major Thomas W. Maloney has been appointed inspector, and Lieut. John F. Schafmeister, assistant to the division surgeon.

Lieut.-Col. John J. Roddy has been appointed division surgeon at Camp Cody, Deming, N. M.; Capt. Alvin M. Fortney has been appointed sanitary inspector, and Lieut. L. M. Spalding, assistant to the division surgeon.

Officers' Uniforms Available Through Quartermaster's Department

A general order makes the following announcement relative to the supply of officers' uniforms:

> III. Section IV, G. O. 56, W. D., 1918, is rescinded and the following is substituted therefore:
>
> 1. The following cloths are adopted as standard for officers' uniforms, and all uniforms for officers made in the United States after Dec. 31, 1918, will be one of these prescribed standards:
>
> For coat and breeches, summer wear in the United States and in the tropics only: a, an O. D. cotton; b, a 13-ounce all wool worsted gaberdine. For coats, breeches and overcoats: a, a 12-ounce worsted serge; b, a 16-ounce worsted serge; c, a 16-ounce whipcord; d, a 21-ounce whipcord or elastique; e, a 20-ounce melton. For riding breeches: a, a 23-ounce Bedford cord. For overcoats: a, a 32-ounce melton or kersey.
>
> 2. The quartermaster corps will after Dec. 1, 1918, carry a supply of these cloths, and officers can purchase their personal requirements at the government prices. Samples of cloths with the issue prices will be kept on hand by all camp, cantonment and post quartermasters and may be examined by officers on request after the date mentioned. For the present stock will be carried at the following depots only, but this list will be extended from time to time as cloth becomes available: New York depot, Washington depot, Atlanta depot, Sam Houston depot, San Francisco depot, Chicago depot, St. Louis depot.
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> 3. The quartermaster general will determine by thorough investigation a schedule of fair prices for making uniforms, including all necessary trimmings, linings, etc., but not including the cloths, and prepare a list of responsible tailors who agree to make uniforms for officers at the schedule rates, the quartermaster general guaranteeing to the tailors the collection of bills for all uniforms ordered through the representatives of the quartermaster general. The schedule of prices, the list of tailors agreeing to make uniforms at these prices and the regulations governing the sale to officers of the standard cloths, the placing of orders, the acceptance of uniforms ordered and the payment of bills will then be published to the service.
>
> 4. The quartermaster corps will arrange to supply from stock at cost made up (ready to wear) officers' uniforms. These will be provided in only two types of cloth for coats and breeches, namely: The 12-ounce worsted serge and the 20-ounce melton and 32-ounce melton for overcoats. It is expected that an adequate supply can be provided at the principal depots mentioned in Paragraph 2 by Nov. 1, 1918, and later at other depots and camps.

The Epidemic of Influenza in the A. E. F.

The *Weekly Bulletin* of the Medical Service in the American Expeditionary Forces contains the following statement relative to the epidemic of influenza. "This disease which was mentioned previously as 'Three Day Fever' is now known to be due to the true Pfeiffer bacillus, although evidently of a much milder strain than the type which prevailed in the pandemic of 1889. This epidemic, though of remarkable mildness in the two months from April 15 to June 15, has within the past four weeks shown certain characteristics which indicate the kind of increasing virulence with which bacteriologists are familiar in the case of strains of pneumococcus passed rapidly through a succession of susceptible animals such as the rabbit. Onset with temperature of 104, projectile vomiting, severe headache, Kernig's sign and high tension spinal fluid, flowing freely up to 100 c.c. has not been uncommon and many cases have been mistaken for, and some have been treated as, meningitis with antimeningococcus serum. No harm, apparently, has come from the use of the treatment and symptomatic relief has often followed the withdrawal of the excess fluid, but confusion is likely to arise when the fluid clear on the tap becomes turbid with leukocytes from the reaction following the introduction of the antimeningococcus serum. If the meningococcus is not found on smear or culture it is well to be satisfied with withdrawal of fluid and not to give serum. Pneumonias have been more common sequelae in July than in April.

Prompt hospitalization effectively guards against serious sequelae and is still the best treatment to be offered. Relief from headache by aspirin, abundant use of water internally, gentle laxative, and, when the temperature has fallen, a nourishing diet, have seemed to be the approved treatment. The same warning should be given now as always in treating influenza, that is, warn against premature return to hard work. The epidemic is about at an end so far as A. E. F. troops are concerned and has been throughout of a benign type, though causing considerable noneffectiveness."

Medical Teachers Registered Under Selective Service Act

A circular letter from the Committee on Education and Special Training sent on Sept. 19, 1918, to all institutions having units of the Students' Army Training Corps.

1. Men heretofore or hereafter classified in Class I, Group A, and called to military service will not be granted furloughs.

2. Teachers who are essential are eligible to claim deferred classification under Section 80, Selective Service Regulations, and they are encouraged to do so. Such deferred classification should be claimed for them by the educational institutions by which they are employed.

3. Teachers who are denied deferred classification by the district board and who are liable to call to military service will be encouraged to request voluntary induction in the unit of the S. A. T. C. stationed at the institution where such instructors are employed.

4. In very exceptional cases and on the recommendation of the educational department of the committee teachers who have already been drafted and are now at mobilization camps will be transferred back as soldiers on active duty to the unit of the S. A. T. C. where needed; provided such instructors do not object to return as soldier instructors, have not been permanently assigned in a capacity wherein their ser-

vices will be of great value to the Army, and have not already been designated to attend officers' training schools.

5. Since the colleges are under contract with the War Department to train enlisted men in the U. S. Army, essential teachers are obviously engaged in occupations that are strictly "necessary to the maintenance of the military establishment." It is, therefore, expected that the really essential professors and teachers will be granted deferred classification under the new law on this account. Heads of institutions should see to it that district boards and their industrial advisers are fully informed of all the facts in every case.

Disease Bulletin for A. E. F.

Some interesting notes regarding the Medical Service for the American Expeditionary Forces appear in the weekly *Bulletin of Disease*, September 9, published by the chief surgeon, A. E. F.:

Gas Fright in the Fifth Division.—In a recent attack 251 patients were sent to the field hospital as gassed cases. It was found that over half of these were not sufficiently gassed to require evacuation. It is pointed out the greatest discretion must be used by surgeons in sorting these cases. Where concentrated gases are employed, short exposure only is required to produce severe poisoning. When gases are highly diluted the men may be exposed for some time and still be able to continue on duty. Many men are suffering, not from gassing, but from gas fright. All they need is reassurance. Surgeons must base their diagnoses on physical sense rather than on statements made by patients: place more reliance on statements made by the patient's lungs than on statements made by his mouth.

Influenza Epidemic in the 37th Division—Spitting.—An inspection of this division showed that some men were billeted in an ill ventilated and dusty loft over a stable. The men were working long hours under pressure and returned at night always fatigued and wet from their work in the dugouts. The first cases occurred on July 28, the third case on August 7, and fourteen cases between August 9 and 13. The daughter of the woman who owned the billet fell ill with the disease and the mother made the significant remark that she felt that her daughter had been infected because of the terrible American habit of spitting; that her courtyard had been kept constantly wet by the spitting of the men billeted in the stable. This was an interesting commentary on one of the few but, nevertheless, very serious breaches of hygiene practiced by American troops. It was recommended as a result of this inspection that an effort be made to start a campaign of education to diminish the spitting habit among troops.

Trench Foot.—This is largely a matter of discipline. The cause is constant standing in wet places and impairment of the circulation. Twenty-four hours is the limit for a tour of duty in a water logged trench. Rubber boots are useful when actually working in the trenches, but they are to be used only for this purpose and are to be removed when the necessity is passed. Rubber boots are not suitable for dry cold. If trench foot develops in a command the commanding officer is to be grilled on the following questions, in the form of a report which he makes out every time for each man acquiring trench foot: (1) frequency of baths; (2) frequency of change of socks; (3) length of time on duty and where; (4) condition of trenches; (5) efforts made to improve trench conditions; (6) reason for failure to attain improvement; (7) were unfavorable conditions reported? if not, why? (8) with what result? (9) condition of dugouts; (10) condition of other men of platoon.

This army evacuated in 1915-1916, 3,311 trench foot cases. In 1916-1917 there were 395 evacuated for this trouble. This is due to better care of the feet and better trenches. One should remember always that in the case of trench foot you should use antitetanic serum.

Notes on Venereal Disease from Base Section No. 2.—

	Prophylactic Treatments Given		New Cases V. D.	Cases Developing Following Failure to Take Prophylaxis
Total white troops.....	76,011	4,959	95	37
Total colored troops....	11,008	1,611	41	23
Since organization of B. S. No. 2 there have been		93,343	2,549	1,025

Watch Out for Imported Cooties.—We have enough of the European varieties for experimental purposes. On a transport arriving recently in one organization there were the following number of cases of well established pediculosis pubis: 338th Labor Battalion, Co. A, 22 cases; Co. B, 26 cases; Co. C, 37 cases; Co. D, 27 cases.

Missing

Lieut. Leonidas Barkdull Faulk, M. C., U. S. Army, Monroe, La., is reported in the Official Bulletin of July 5, to be missing in action.

In Captivity

Notification has been received of the capture of Capt. Arthur A. Mitten, Milwaukee, at Fismes, August 4.——Dr. Howard F. Kane, Washington, D. C., on duty in the British Expeditionary Forces, is reported to be a prisoner at Rastatt, Germany.

Wounded

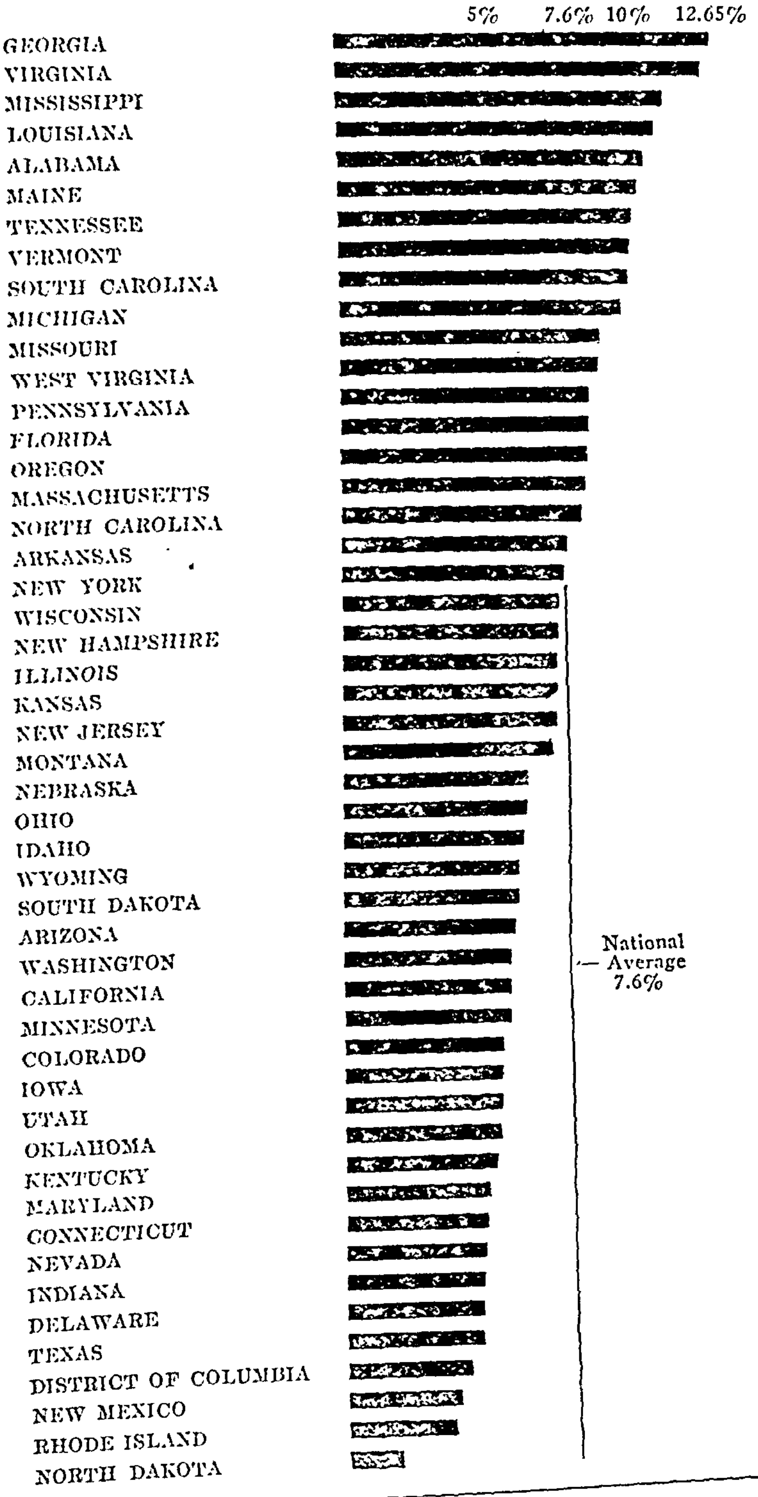
The following medical officers are reported to have been wounded: Lieut. Wesley Lewis Boyden, M. C., U. S. Army, Seymour, Wis., September 6, severely; Lieut. William Wallace Dodge, M. C., U. S. Army, Washington, D. C., severely; Capt. James V. Nelson, M. C., U. S. Army, Logansport, Ind., severely; Lieut. Hugh Rannell Hildebrant, M. C., U. S. Army, Dundee, Mich., severely; Lieut. William Edwin Park, New Milford, Pa., degree undetermined; Lieut. Fred B. Shaffer, Somerset, Pa., wounded in the head; Lieut. William E. Lawhead, U. S. Navy, on duty with the Marine Corps, severely; Lieut. Finis E. Rushing, Coalgate, Okla., degree undetermined; Lieut. Charles A. Jenkins, M. C., U. S. Army, Willimantic, Conn., wounded and gassed; Lieut. Charles C. Ryan, Republic, Pa., slightly; Lieut. Holland T. Ground, Virginia, Minn., severely; Lieut. Shores Erastus Clinard, Sorrento, Fla., degree undetermined; Lieut. Raymond Gene Tuck, Marlette, Mich., severely; Lieut. Frederick J. Cullen, Naparine, Wash., severely.

Awards for Valor

The Distinguished Service Cross has been awarded to Lieut. Thomas M. Barber, M. C., U. S. Army, on duty with the infantry. "On May 28 to 30, 1918, near Cantigny, France, he repeatedly demonstrated heroic self-sacrifice by caring for wounded under enemy fire and with apparent contempt for his own safety. When his aid station had been destroyed by shell fire he promptly moved into a shell hole nearby and continued his faithful work."——Lieut. Frank H. McGregor, M. C., U. S. Army, Mangum, Okla., has been awarded the British Medal for bravery.——Major John T. Barbee, M. C., U. S. Army, Jackson, Tenn., has been decorated for bravery.——Major Wilbur M. Phelps, Staunton, Va., has been awarded the Croix de Guerre.——Capt. Alson J. Hull, M. C., U. S. Army, Williamstown, Mass., has been awarded the British Military Cross.——Lieut. William A. Toertmeyer, M. C., U. S. Army, Cincinnati, has been awarded the Distinguished Service Cross. "At the battle of Cantigny, France, May 28-30, 1918, he readily, on his own initiative, left the security of the trench to administer first aid under fire and in full view of the enemy snipers and machine gunners. His brave conduct was a noble example and his ministrations relieved suffering and saved lives."——Private John B. When, medical department, assigned infantry, has been awarded the Distinguished Service Cross. "For three nights at Cantigny, France, May 28 to 30, 1918, he worked unceasingly under fire, bringing the wounded to safety, ministering to them under his own initiative. He repeatedly left shelter to help wounded men."——Private Frank J. Reynolds, medical department, assigned infantry, "During the fight of Cantigny, France, May 28 to 30, 1918, while acting as stretcher bearer, he constantly and fearlessly exposed himself to machine gun fire to attend wounded, frequently under his own initiative when he might have remained in shelter himself."——Lieut. Leo J. Crum, M. C., U. S. Army, Kalamazoo, Mich., has been cited in orders. At Cierges he had his first aid station in a house at the extreme edge of the village under continuous shelling and was successful in evacuating all his patients.——Drs. Mary Lee Edward, Caroline Sandford Finley, New York City, and Anna I. Von Sholly, Flushing, N. Y., have received the Croix de Guerre from the French government for "excellent surgical work performed under heavy barrage in France."

REJECTIONS AT CAMPS FOR PHYSICAL DEFECTS

The subjoined chart and table, prepared at the office of the Provost Marshal-General, indicate the relative number of registrants inducted and rejected in the various states for the period from Feb. 10 to September, 1918 (date checked):



RECORD FROM FEB. 10, 1918, TO DATE INDICATED

United States	Inducted	Accepted	Rejected		Date Checked September
			Number	Per Cent.	
Alabama	36,845	33,054	3,791	10.29	10
Arizona	3,309	3,116	193	5.83	6
Arkansas	33,339	30,782	2,557	7.67	11
California	35,607	33,605	2,002	5.62	11
Colorado	14,780	13,983	803	5.43	11
Connecticut	19,347	18,429	918	4.74	11
Delaware	3,635	3,468	167	4.59	11
District of Columbia	5,973	5,721	252	4.22	11
Florida	20,048	18,354	1,694	8.45	11
Georgia	47,701	41,667	6,034	12.65	16
Idaho	8,863	8,323	540	6.09	11
Illinois	128,834	119,413	9,421	7.31	17
Indiana	45,276	43,186	2,090	4.62	10
Iowa	49,178	46,524	2,654	5.40	12
Kansas	31,478	29,182	2,296	7.30	12
Kentucky	39,951	37,892	2,059	5.15	12
Louisiana	34,997	31,232	3,765	10.75	12
Maine	11,311	10,172	1,139	10.07	13
Maryland	22,895	21,774	1,121	4.90	13
Massachusetts	51,095	46,859	4,236	8.29	12
Michigan	64,620	58,773	5,847	9.05	17
Minnesota	53,693	50,675	3,018	5.62	13
Mississippi	31,284	27,829	3,455	11.05	13
Missouri	58,682	53,493	5,189	8.84	9
Montana	15,994	14,849	1,145	7.15	9
Nebraska	17,444	16 342	1,102	6.31	9
Nevada	2,020	1,925	95	4.70	9
New Hampshire	5,692	5,283	409	7.32	9
New Jersey	50,447	46,763	3,684	7.30	16
New Mexico	7,858	7,551	307	3.90	9
New York	156,223	144,351	11,872	7.59	17
North Carolina	44,817	41,173	3.644	8.13	4
North Dakota	17,867	14,534	3,333	1.86	3
Ohio	81,223	76,107	5,116	6.29	18
Oklahoma	40,401	38,247	2,154	5 33	9
Oregon	14,046	12,863	1,183	8.42	9
Pennsylvania	121,644	111,359	10,285	8.45	9
Rhode Island	7,237	6,972	265	3.66	9
South Carolina	31,533	28,449	3,084	9.81	4
South Dakota	15,375	14,458	917	5.96	9
Tennessee	35,016	31,526	3,490	9.96	9
Texas	79,424	75,785	3,639	4.59	10
Utah	6,166	5,833	333	5.40	10
Vermont	4,671	4,207	464	9.93	11
Virginia	36,506	31,970	4,536	12.43	13
Washington	18,703	17,650	1,053	5.63	10
West Virginia	28,887	26,255	2,532	8.77	10
Wisconsin	49,295	45,648	3,647	7.40	10
Wyoming	6,119	5,752	367	5.99	10
Totals	1,747,355	1,613,458	133,897	7.6	

COMMISSIONS ACCEPTED, MEDICAL CORPS, U. S. ARMY

Previous lists published in The Journal, June 1, 22 and 29, July 13, 20 and 27, August 3, 10, 24 and 31, September 7, 14, 21 and 28.

ALABAMA

Anniston—Cleveland, C. H., Jr.
Birmingham—McQuiddy, R. C.
McFall—Thwoatt, D. H.
Montgomery—Pollard, C. T.

ARIZONA

Bisbee—Fitzgerald, G. H.

ARKANSAS

Fort Smith—Thompson, E. M.
Gurdon—McLain, C. W.
Marked Tree—Baird, J. L.
Roland—Brocks, C. M.
Rosboro—Baker, W. P.
Searcy—Edrington, D.

CALIFORNIA

Fresno—Martin, W. P.
Holtville—Wimp, W. H.
Los Angeles—Ferry, F. C.
Frees, B. M.
Gilbert, W. H.
May, H. C.
Monteleone, J.
Pinkerton, B. G.
Tebbetts, H. B.
Madera—Ranson, D. H.
Ontario—Titus, J. H.
Placentia—Thibodo, F. H.
Sacramento—Davis, H. J.
San Jose—Dickinson, A. E.
Gerlach, F. C.
Hablutzel, C. E.
San Jose—Smith, A. S. J.
Sonora—Pleth, V.
South Pasadena—Browning, C. C.
Metcalf, C. F.
Susanville—Walsh, F. D.

COLORADO

Denver—Bell, C. C.
Holden, G. W.
Fort Collins—Norton, D. O.
Pueblo—Lucas, W.
Swink—Miller, C. L.

CONNECTICUT

Hartford—Brayton, H. W.
Pendleton, E. B.
Litchfield—Page, C. I.
Ridgefield—Lowe, R. W.

DELAWARE

Milford—Marshall, S. M. D.

DISTRICT OF COLUMBIA

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Larkin, P. E.
Poole, T. A.

FLORIDA

Bronson—Markey, M. R.
Jacksonville—Smith, M. H.
Lake City—Bates, T. H.

GEORGIA

Cuthbert—Patterson, L. K.
Hawkinsville—Bailey, C. B.
Hazelhurst—Gertman, W. M.
Quitman—McMichael, J. R.
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Tifton—Hendricks, W. H.
Woodbury—Allen, W. P.

IDAHO

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ILLINOIS

Aledo—Smeltzer, C. E.
Atlanta—Brock, G. W.
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Bushnell—Griffith, J. C.
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Beil, H. H.

Chicago—Epstein, A. I.
Graybeal, J. M.
Hartwell, B. O.
Huber, J. M.
Lipshults, G. U.
Luse, H. D.
Lynch, S. E.
Piper, L. P.
Porter, J. L.
Stackable, J. B.
Whitaker, W. B.
Wicks, S.
Zaborktsky, J.
Crystal Lake—Hull, H. D.
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Galesburg—Ripley, C. B.
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Oregon—Roe, J. B.
Paris—Gumm, A. G.
Williams, B. G. R.
Peru—Yoder, O. C.
Pleasant Plains—Fink, F. C
Ramsey—Staff, E. P.
Shelbyville—Monroe, H. E.
Spring Valley — Miltenberger, R. E.
St. Anne—Ayling, G. H.
Waukegan—Ambrose, C. S.
Gourley, F. L.

INDIANA

Alexandria—Kellar, F. G.
Anderson—Austin, M. A.
Azalia—DeLong, O. A.
Bicknell—Staley, T. M.
Converse—Brookie, R. W.
Dana—Strong, D. S.
Dunkirk—Heller, N. L.
Elkhart—Bassler, C. R.
Hoover, E. M.
Gilman—Armstrong, P.
Hammond—Greenleaf, G. F.
Hillsboro—Bounell, E. G.
Indianapolis—Jackson, F. E.
Kokomo—Lung, B. D.
Lafayette—Schreiber, A. W.
[illegible] C. H.
[illegible] H. E.
[illegible] E.
Rochester—Taylor, H. W.
Rockport—Ehrman, C. D.
Versailles—Comes, M. J.
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IOWA

Algona—Burke, C. H.
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Linehan, L. J.
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Washington—Masson, H. F.

KANSAS

Kingman—Haskins, H. E.
Lexena—Nesselrode, C. C.
Moline—Shaffer, C. E.
Norcatur—Knox, W. E.
Wichita—Carter, W. H.

KENTUCKY

Henderson—Jones, G. F.
Louisville—Baker, M. C.
Clem, J. G.
Kahn, L. H.
Madisonville—Long, R. W.

LOUISIANA

Marksville—LaForgue, L. D.
Plaquemine—Holloway, E.

MAINE

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Limerick—Carpenter, L. W.
South Windham—Moulton, O. G.

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Lancaster, G. E.
Princess Anne—Lankford, H. M.

MASSACHUSETTS

Boston—Fairbanks, A. W.
Flagg, E.
Flagg, H. H.
Martin, D. L.
Chicopee—Agnew, J. R.
Lawrence—Allen, G. S.
Lynn—Underhill, S. G.
Malden—Hunt, W. E.
Melrose—Plumb, D. G.
North Billerica—Forhan, N. K.
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Boyd, J. V.
Ober, R. B.
Ritter, H.
Yerbury, C. C.
Taunton—Fox, W. Y.
Waltham—Dascobe, O. L.
Wollaston—Curtis, W. G.
West Springfield—Steele, G. L.

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Jentgen, C. J.
McRae, D. H.
Myers, G. P.
Van Hee, J.
Otsego—Whitney, H. E.
Richmond—Greene, I. W.
Whitehall—Smith, C. F.

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Barnum—Anderson, A. R.
Mazeppa—Radabaugh, R. C.
Minneapolis—Booth, A. E.
McKinney, F. S.
Morton, H. M.
Ziskin, T.
Slayton—Benoit, F. T.
St. Paul—Greene, C. L.
Pearson, F. R.

MISSISSIPPI

Meridian—Touchstone, A. G.

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Centralia—Hickerson, J. T.
Flat River—Sample, W. D.
Granby—Wilbur, H. L.
Jefferson City—Bedford, S. V.
Kahoka—Bridges, J. R.
Kansas City—Green, L. B.
Orr, T. G.
Wattenberg, J. E.
La Clede—Caldwell, J. C.
Mound City—Perry, D. C.
Neosho—Roseberry, E. M.
Richland—Monday, L. R.
Sedalia—Barnum, K. R.
Dwyer, F.
Dyer, D. P.
St. Charles—Welch, G. N.
St. Joseph—Hunt, W. J.
St. Louis—Davis, F. L.
Gayler, W. C.
Harnagel, F. H.
Hartman, J. A.
Hughes, A. J.
Kieffer, V. B.
McDonald, J. W.
Miller, H. B.
Wilhite, G. O.
Washington—Seibert, D. A.

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Cascade—Stratton, O. T.
Great Falls—Porter, E. M.

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Hastings—Carson, W. T.
Kearney—Gibbons, C. K.
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Kadvay, G. J.
Sumney, H. C.
Weeping Water—Reed, F. P.

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Walpole—Craig, W. P.

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Millville—Mayhem, C. H.
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Mockridge, O. A.
Streen, M. E.
Roselle Park—Wait, H. N.
Summit—Clark, C. P.
Keeney, C. B.
Trenton—Richardson, H. T.

NEW MEXICO

Dexter—Hubbard, E. J.
East Las Vegas—Crail, F. H.

NEW YORK

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Albion—Cooper, D. G.
Branchport—Costello, M. E.
Brooklyn—Breitling, C. W.
Hargitt, C. A.
Kranzer, L. L.
Long, J.
Piquet, S. D.
Thompson, J. E.
Buffalo—Scibetta, S. L.
Elmira—Kinner, J. L.
New York City—Armstrong, A. S.
Duffy, J. E.
Dunham, H. G.
Getman, J. E.
Halpern, T.
Keil, F. C.
Mills, W. S.
Muller, E. F.
Nathan, P. W.
Nicholson, A. O.
Polak, M. S.
Prioleau, P.
Rudderow, E. D.
Schwartz, H. J.
Steinbach, L.
Perry—Brownell, J. R.
Verona—George, J. D.
Watertown—Montgomery, H. C.
West Henrietta—Ames, J. A.

NORTH CAROLINA

Canton—Pegram, R. W. S.
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Rowland—Carmichael, T. W.
Wilmington—Bolles, C. P.

OHIO

Bloomdale—Sheldon, E.
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Cincinnati—Hulick, T.
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Cohen, A.
Luck, H. C.
McDonald, C. L.
Sharp, W. D.
Timberlake, H. P.
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McGarvan, C. W.
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Silver, H.
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Toledo—Burritt, C. A.
Kahn, D.
Tiffin—Williard, G. W.
Williamstown—Tombough, A. A.

OKLAHOMA

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Bokoshe—King, J. T.
Granite—Nunnery, A. W.
Norman—Thurlow, A. A.
Okmulgee—Bercaw, J. E.
Ponca City—Arrendell, C. W.
Sapulpa—Harris, B. C.
Shawnee—Colvert, G. W.
Tryon—Gayman, S. E.
Tulsa—Mohrman, S. S.
Wapanucka—Ellis, J. M.
Weatherford—Gordon, J. M.

OREGON

Salem—Walton, R. W.

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Bellevue—Henry, E. B.
Walker, G. H.
Carlisle—Whistler, E. L.
Christiana—Kyle, E. V.
Dickson City—Cantor, A. S.
Harrisburg—Kreider, J. H.
Johnstown—Sagerson, R. J.
Lancaster—Brown, H. F.
Leacock—Keylor, W. N.
Ligonier—Johnson, J. B.
Monaca—Gormley, J. R.
Narbeth—Faries, C. T.
New Castle—McCune, S. R. W.
New Holland—Hendrickson, L. H.
Philadelphia—Bedrossian, E. H.
Brooke, J. A.
Carey, H. K.
Forman, H. J., Jr.
Goodman, R.
Philadelphia—Kuehner, H. M.
Williams, C. S.
Pittsburgh—Anderson, R. L.
Carroll, T. B.
Denslow, W. B.
Gaggin, V. S.
Hodgkiss, J.
Jennings, C. W.
Maxwell, W. C.
Nicholson, H. S.
Sharon—Heilman, R. S.
Hyde, A. P.
Springville—Diller, W. L.
Washington—Dunkle, G. B.
Lewis, O. G.
Ramsey, G. W.
Wilkes-Barre—Gustites, F. W.

RHODE ISLAND

Providence—Doten, C. R.

SOUTH CAROLINA

Charleston—Guess, J. D.
Hartsville—Edleston, W.
McCormick—Harmon, J. S.
Spartansburg—Myers, D. V.
Woodruff—Workman, B. J.

SOUTH DAKOTA

Brookings—Green, B. T.
Elk Point—Bushnell, W. F.
Howard—Collins, W. H.
Winifred—Barthell, J. F.

TENNESSEE

Ducktown—Kimsey, W. W.
Memphis—Blue, J. B.
Simpson, W. L.
Nashville—Hardy, W. M.
Rockwood—Clack, W. S.

TEXAS

Abilene—Alexander, S. M.
Belton—Crain, A. B.
Dallas—Boyce, W. A.
De Kalb—Beck, J. W. E. H.
Detroit—Caton, J. H.
Hico—Durham, C. E.
Quinlan—Goode, E. P.
Red Oak—Rogers, J. O.
San Angelo—Rush, H. P.
Seminole—Bell, M. C.
Sherman—Ridings, A. L.
Sweetwater—Fortner, A. H.
Waco—Lanham, H. M.

UTAH

Delta—Broaddus, C. A.
Logan—Budge, E. S.
Salt Lake City—Felts, H. B.
Hammond, E. D.

VERMONT

Montpelier—Tindall, W. J.
White River Junction — Stanley, M. P.

VIRGINIA

Litwalton—Pierce, C. T.
Lowesville—Whitehead, W. H.
Middletown—Williams, T. A.
Purcellville—Hirst, V. B.
Richmond—Bear, J.
Swoope—Hartman, W. F.
University—Peterson, W. C.

WASHINGTON

Fort Steilacoom—Keller, W. N.
Seattle—Baldwin, L. B.
Spokane—Wallace, J. E.
Vancouver Barracks — McClurg, C. B.

WEST VIRGINIA

Kempton-Lanish, L. J.

WISCONSIN

Glidden—Law, W. G.
Lake Mills—Leicht, P.
Loganville—Westedt, O. E. A.
Milwaukee—Madison, J. D.
Montford—Ketterer, E. A.

WYOMING

Sheridan—Hamilton, O. P.
Newcomer, N. B.

COMMISSIONS OFFERED AND ORDERS TO DUTY ON ACCEPTANCE

Alabama

To Camp McClellan, Ala., Lieuts. T. S. McDIERMID, Brilliant; P. K. TAIT, Dora.

To Camp Sheridan, Ala., Lieuts. A. M. WALDROP, Cordova; J. C. MORGAN, Fairfax; J. E. BECK, Mobile.

To Camp Sherman, Ohio, Lieut. J. H. WINN, Huntsville.

To Fort Oglethorpe for instruction, Major J. M. MASON, Birmingham; Capts. J. H. JONES, Camden; R. C. JONES, Mobile; Lieuts. L. B. FARISH, Brewton; S. D. ARMISTEAD, Foley; M. S. WHITE, Hamilton; J. U. REAVES, J. M. WILSON, Mobile; R. C. BAINS, Siluria. For instruction in military training, urology and dermatology, Lieut. C. E. FARISH, Mobile.

Arkansas

To Camp Logan, Texas, base hospital, Capt. J. I. SEARBOROUGH, Little Rock.

To Camp MacArthur, Texas, Lieut. E. L. HANEY, Hackett.

To Fort Oglethorpe for instruction, Capt. A. BRUNSON, Pine Bluff; Lieuts. A. H. COOK, Hot Springs; R. R. DALE, Texarkana.

To Fort Riley for instruction, Lieuts. D. C. ROBERTS, Huntsville; E. E. SCOTT, Magazine; R. A. HARKINS, Ratcliff; J. D. THORNTON, Willow.

California

To Camp Fremont, Calif., base hospital, Capt. C. D. HUBBARD, Huntington Park.

To Camp Kearney, Calif., Capts. C. B. DIRKS, Eagle Rock; J. S. DERRICK, Los Angeles; Lieuts. C. E. GAGE, Los Angeles; S. J. FITCH, Pasadena; A. F. WELIN, Rio Vista; E. N. CRABTREE, San Diego; J. McCAULEY, Santa Ana. Base hospital, Capt. K. R. SLEEPER, Los Angeles; Lieuts. C. A. ROBINSON, Ione; E. P. WALLACE, Pomona; R. A. JONES, San Francisco.

To Camp Sherman, Ohio, to examine the command for nervous and mental diseases, Capt. G. L. CHAMBERLAIN, Camino.

To Fort Riley for instruction, Lieuts. K. L. SCHAUPP, Palo Alto; B. J. LASSWELL, Quincy.

To Mendocino, Calif., Mendocino State Hospital, Capt. J. A. COLLIE, LaManda Park.

To New Haven, Conn., Yale Army Laboratory School, for instruction, Lieut. S. R. DANNEBAUM, San Francisco.

To report to the commanding general, Hawaiian Department, Capt. J. W. WILSON, Oroville. Western Department, Capt. J. L. ARBOGAST, Sacramento.

To San Francisco, Calif., Capt. W. R. MOLONY, Los Angeles.

Colorado

To Camp Logan, Texas, Capt. E. D. BURKHARD, Delagua.

To Fort Oglethorpe for instruction, Lieut. P. C. GEISSLER, Colorado Springs.

To Fort Riley for instruction, Lieut. A. H. PETERS, Colorado Springs.

Connecticut

To Camp Meade, Md., to examine the troops for cardiovascular diseases, Lieut. H. A. MARTELLE, Hartford.

To Fort Oglethorpe for instruction, Capt. C. K. PETERSON, Lakeville; Lieut. G. E. PORTER, Warehouse Point.

To Fort Totten, N. Y., Capt. H. L. WELCH, New Haven.

District of Columbia

To Camp Meade, Capt. A. C. NORCROSS, Washington.

To Camp Wadsworth, S. C., Lieut. J. A. MURPHY, Washington.

To Fort Oglethorpe for instruction, Lieuts. S. BRICKER, J. T. MANN, H. W. MOFFITT, Washington.

To Walter Reed General Hospital, Capt. W. J. MALLORY, Washington.

Florida

To Camp Sheridan, Ala., Lieut. J. C. ELLIS, Perry.

To Fort Oglethorpe for instruction, Capt. E. S. ESTES, St. Augustine; Lieuts. J. F. CRANFORD, Inverness; W. C. BUFFALOW, Jacksonville; J. C. DAVIS, Jr., Quincy.

Georgia

To Camp Jackson, S. C., Lieut. J. O. STRICKLAND, Pembroke. Base hospital, Capt. St. J. RAOUL de CARADEUC, Savannah.

To Camp McClellan, Ala., Lieuts. S. W. CARTER, Sr., Thomaston; C. L. AYERS, Toccoa.

To Camp Sheridan, Ala., Lieuts. C. H. PINSON, Stockbridge; W. L. BEAUCHAMP, Williamson.

To Camp Wadsworth, S. C., Lieut. J. P. TURK, Nelson.

To Fort Oglethorpe for instruction, Capts. J. M. BARNETT, Albany; J. R. GARNER, Atlanta; Lieuts. M. WARD, Albany; W. M. RILEY, Americus; H. L. BARKER, Carrollton; M. S. RICHARDSON, Cedartown; M. F. PENNINGTON, Columbus; M. E. WINCHESTER, Ochlocknee; J. A. WARD, Quitman; R. L. JOHNSON, Waycross.

To report to the commanding general, Southeastern Department, Lieut. L. BEASON, Dot.

Idaho

To Fort Oglethorpe for instruction, Capt. E. T. ANDERSON, Weiser; Lieut. E. S. PRINDLE, Spirit Lake.

To Fort Riley for instruction, Lieut. F. M. RAY, Pocatello.

Illinois

To Ann Arbor, Mich., State Psychopathic Hospital, Lieut. H. E. RANDOLPH, East Moline.

To Camp Bowie, Texas, Lieut. J. F. CLARK, Chicago.

To Camp Custer, Mich., Lieuts. R. B. ANDREWS, Belvidere; C. BERFIELD, Toulon. Base hospital, Capt. J. F. BRESNAHAN, Chicago.

To Camp Grant, Ill., Capts. O. L. HANSON, C. M. POHL, Chicago; S. F. HENRY, Effingham; Lieuts. H. L. DAY, Bluffs; W. D. CHRISMAN, Bradford; T. W. RENNIE, Chicago; T. J. FLATELY, Moline.

To Camp McClellan, Ala., Capt. A. PARSONS, Genesee; Lieuts. E. M. PRICE, Astoria; R. F. BARKER, East St. Louis; J. R. SHOLL, Peoria.

To Camp Pike, Ark., Major B. S. ROGERS, Chicago.

To Camp Sevier, S. C., Lieut. O. CARAKER, Olmstead.

To Camp Sheridan, Ala., Lieut. H. L. FISCHER, Kewanee.

To Camp Zachary Taylor, Ky., Lieut. R. F. WRIGHT, Chicago.

To Fort Oglethorpe for instruction, Capts. G. L. ALT, Chicago; C. W. BAILEY, Hebron; J. C. PAINE, Peoria; Lieuts. E. AUSTIN, Benton; C. R. BENNER, J. CRAYBEAL, G. HALPERIN, J. W. KAIL, S. MANN, I. S. SEGALL, R. E. STOBIE, Chicago; J. D. BYRNE, Du Quoin; J. C. KASSMEYER, Durand; J. C. R. WETTSTEIN, Effingham; W. B. McCLURE, Evanston; F. WOLTMAN, Kampsville; P. H. WESSEL, Moline; L. F. BOWMAN, J. J. McINTOSH, Mount Carroll; O. B. ORMSBY, Murphysboro; J. H. SPENCER, Murrayville; D. M. LITTLEJOHN, Pana; C. E. ROBB, Rock Island; O. L. EDWARDS, Roodhouse; W. H. McCANDLESS, Sterling; A. H. CLAE, Waukegan.

To Fort Riley for instruction, Lieuts. C. H. BAKER, Altamont; C. A. ROBINS, H. D. SHELDON, Chicago; E. M. MONTGOMERY, Cowden; G. C. KLEIN, Kincaid; H. A. LITTLEFIELD, Littleton; G. W. CAMPBELL, Louisville; C. M. MURRELL, Matherville; C. H. McPHERSON, Middletown; F. B. SCHROEDER, Princeton; C. M. FLEMING, Rushville; S. C. LORTON, Shumway.

To New Haven, Conn., Lieut. I. P. RICE, Chicago. Yale Army Laboratory School for instruction, Capts. E. SARGENT, Moline. C. WAKEFORD, Norris City.

To New York, Neurological Institute, for instruction, Capt. G. B. HASSIN, Chicago.

Indiana

To Camp Dodge, Iowa, as orthopedic surgeon, Capt. I. M. WASHBURN, Rensselaer.

To Camp Grant, Ill., Capts. E. A. STURM, Jasper; H. M. BOUNNELL, Waynetown.

To Camp Greene, N. C., Lieut. A. B. THOMPSON, Lake.

To Camp Jackson, S. C., base hospital, Capt. J. A. MacDONALD, Indianapolis.

To Camp Sherman, Ohio, Lieuts. C. J. BIEDENKOFF, Grand View; G. C. CONGLETON, Terre Haute.

To Fort Oglethorpe for instruction, Capts. C. C. ROBINSON, Indiana Harbor; O. S. DEITCH, Indianapolis; A. T. DAVIS, Marion; W. H. BAKER, South Bend; Lieuts. G. F. BICKNELL, Indiana Harbor; J. C. CARTER, J. L. JACKSON, H. J. LEMMON, Indianapolis; Z. M. LAUGHLIN, Linton; G. C. COULBOURN, Marion Station; J. V. KERRIGAN, Michigan City; C. J. MUNNS, Newburgh; B. F. DERR, South Bend; L. G. SPRADLEY, Tennyson; N. L. REYNOLDS, Warsaw.

To Fort Riley for instruction, Capts. D. J. CUMMINGS, Brownstown; J. W. IDDINGS, Lowell; Lieuts. J. R. CARNEY, Delphi; J. E. WIER, Evansville; W. B. RICE, J. W. THIMLAR, Fort Wayne; C. A. ENDICOTT, Frankfort; R. S. GALBRAETH, Huntington; F. W. KERN, Kurtz; J. H. HAUCK, J. S. SHAFFER, Terre Haute; E. P. FLANAGAN, Walton.

To Washington, D. C., Surgeon-General's Office, Capt. H. M. EVANS, Chattanooga.

Iowa

To Camp Abraham Eustis, Va., base hospital, Capt. E. F. LaFORCE, Burlington.

To Camp Dodge, Iowa, Capt. R. H. WOODRUFF, Charles City; Lieut. R. M. WALLACE, Titonka.

To Camp Grant, Ill., Lieut. W. H. REDMOND, Cedar Rapids.

To Camp Lee, Va., base hospital, Capt. J. G. ROBERTS, Oskaloosa.

To Fort Des Moines, Iowa, Lieut. M. C. MACKIN, Knoxville.

To Fort Oglethorpe for instruction, Capt. F. LAMBACH, Davenport; Lieuts. M. E. ANDERSON, Clinton; C. M. BRAY, Iowa Falls; M. F. JOYNT, Marcus; C. E. DAKIN, M. J. FITZPATRICK, Mason City; L. G. STUHLER, Monticello; M. S. CORLETT, Westgate.

To Fort Omaha, Neb., Lieuts. B. POWELL, Albia; J. D. SIMONS, Indianola; J. L. COLLINS, Sheffield; A. H. SCHOOLEY, Terrill.

To Fort Riley, Capts. G. H. SOLLENBARGER, Corydon; E. T. WICKHAM, Washington; Lieut. F. E. SIMERAL, Brooklyn. For instruction, Major F. L. LOVE, Iowa City; Capts. F. T. SCANLON, Clear Lake; C. T. LESAN, Mount Ayr; Lieuts. P. B. GLEW, Dallas Center; E. G. MYRICK, Fairfield; C. E. SIMPSON, Norway; B. J. VOIGT, Spencer.

Kansas

To Camp Logan, Texas, Lieut. C. N. PETTY, Altamont.

To Fort Riley, Capt. W. H. WALKER, Kansas City. For instruction, Capt. D. G. BULEY, Sedgwick; Lieuts. L. E. HENDERSON, Coyville; S. BAILEY, Garden City; I. E. HARDER, Kansas City.

To New Haven, Conn., Yale Army Laboratory School, for instruction, Lieut. R. W. VAN DEVENTER, Wellington.

Kentucky

To Camp Greene, N. C., Capt. E. S. ALLEN, Louisville; Lieut. C. B. WITT, Big Spring.

To Camp Jackson, S. C., Lieut. J. C. HARTMAN, Turners Station.

To Camp McClellan, Ala., Lieut. J. P. SIMPSON, Auburn.

To Camp Meade, Md., Lieut. S. L. STULL, Louisville.

To Camp Pike, Ark., base hospital, Capt. C. D. MORRIS, Louisville.

To Camp Sherman, Ohio, Capt. H. C. DORROH, Ashland.

To Camp Zachary Taylor, Ky., Capt. B. J. O'CONNOR, Louisville; Lieut. E. H. MILLER, Vine Grove.

To Fort Oglethorpe for instruction, Capts. C. W. BARNES, J. A. O. BRENNAN, R. L. WOODWARD, Louisville; Lieuts. H. J. SLOCUM, Carrollton; J. W. HOLT, Eminence; H. C. BLOUNT, Leesburg; J. M. BECK, Louisville; H. P. LINN, Paducah; V. C. GILLESPIE, Wilmore; E. B. DRISKELL, Worthville.

Louisiana

To Camp Beauregard, La., base hospital, Capt. T. E. WRIGHT, Monroe; Lieut. E. S. KEITZ, New Orleans.

To Camp Logan, Texas, Capt. A. F. BARROW, St. Francisville.

To Camp MacArthur, Texas, Lieuts. H. A. ELDREDGE, Abbeville; E. K. HARRIS, Converse; E. EHLERT, Waterproof.

To Camp Sheridan, Ala., Lieut. R. P. THAXTON, Pleasant Hill.

To Fort Oglethorpe for instruction, Lieuts. C. DEAN, Bogalusa; M. J. GELPI, New Orleans.

To Leon Springs, Texas, Lieut. W. P. SINGLETARY, Wilson.

Maine

To Boston, Mass., Psychopathic Hospital, Lieut. F. E. ROWE, Augusta.

To Fort Oglethorpe for instruction, Lieuts. H. V. BICKMORE, Portland; H. W. FROHOCK, Rockland.

Maryland

To Camp A. A. Humphreys, Va., Lieut. J. L. VALENTINI, Baltimore.

To Camp Greene, N. C., Lieut. D. E. STONE, Jr., Emmitsburg.

To Camp Lee, Va., Lieut. H. J. STRICKLER, Baltimore.

To Camp Sherman, Ohio, Lieuts. F. G. COWHERD, Cumberland; F. A. CAMALIER, Leonardtown.

Massachusetts

To Camp A. A. Humphreys, Va., Capt. A. C. Eastman, Springfield; Lieut. W. E. BUCK, Wilmington.

To Camp Devens, Mass., Lieuts. S. E. RYAN, Springfield; M. J. SHEALEY, Westboro. Base hospital, Capt. F. L. EVERETT, Springfield. For instruction, Capt. F. T. CLARK, Westfield.

To Camp Gordon, Ga., Capt. F. J. McKENZIE, Springfield.

To Camp Jackson, S. C., Lieut. J. C. SULLIVAN, Webster.

To Fort Oglethorpe for instruction, Capts. F. R. ABBE, H. J. FITZSIMMONS, H. F. MacLEOD, Boston; F. J. SEXTON, Brookline; J. E. BRINDAMOUR, Holyoke; H. C. KIRBY, New Bedford; Lieuts. J. H. DEVENNY, Boston; T. J. CAHILL, Cambridge; T. B. DELANEY, Lowell; E. A. BARROWS, Plymouth; M. B. RADDING, Springfield.

To Fort Totten, N. Y., Lieut. I. W. RICHARDSON, Wakefield.

To New Haven, Conn., Yale Army Laboratory School, Capt. W. W. FULLERTON, Brockton.

To Plattsburg Barracks, N. Y., Lieut. D. F. DOWNING, Westborough.

Michigan

To Ann Arbor, Mich., State Psychopathic Hospital, Capt. P. J. DePREE, Grand Rapids.

To Camp Dodge, Iowa, base hospital, Capt. H. T. WHITE, New Lathrop.

To Camp Sherman, Ohio, Lieut. J. F. CROFTON, St. Joseph.

To Fort Oglethorpe for instruction, Capts. F. B. MINER, Flint; I. BOWDEN, Port Huron; J. B. CAMPBELL, Stanwood; Lieuts H. P. POSTON, Detroit; J. H. HOUTON, Flint; E. W. DALES, H. J. PYLE, Grand Rapids.

To Fort Riley for instruction, Lieuts. F. M. HUNTLEY, Lansing; C. J. DURHAM, Muskegon; R. HENDERSON, Niles.

To Fort Wayne, Mich., Lieuts. W. F. COURIE, Detroit; E. D. HUNDERMAN, Grand Rapids.

Minnesota

To Camp Dodge, Iowa, base hospital, Capt. G. J. TWEEDY, Winona.

To Camp Lee, Va., base hospital, Capt. E. J. HORGAN, Rochester.

To Fort Oglethorpe for instruction, Lieuts. E. S. O'HARE, Milroy; H. D. NEWKIRK, E. OBERG, Minneapolis.

To Fort Riley for instruction, Capt. A. C. TANNER, Minneapolis.

To New Haven, Conn., Yale Army Laboratory School, for instruction, Lieut. L. BAKER, Minneapolis.

Mississippi

To Camp MacArthur, Texas, Capt. C. P. MOSBY, Meridian; Lieut. L. J. COPPEDGE, Rosedale.

To Camp McClellan, Ala., Lieut. J. P. KENNEDY, Greenwood.

To Camp Sheridan, Ala., Lieuts. E. E. SHIVERS, Boyle; J. WELCH, Collins; R. R. WELCH, Kola; H. P. HOPPER, Sancier.

To Fort McPherson, Ga., Lieut. W. W. MERRITT, Fondren.

To Fort Oglethorpe for instruction, Lieuts. W. G. BERRY, Jackson; J. S. MOORE, Magnolia.

To Fort Riley for instruction, Lieut. L. H. SENTEFF, State Line.

Missouri

To Camp Custer, Mich., Capt. J. C. LYTER, St. Louis.

To Camp Dodge, Iowa, Capt. R. E. CASTELAW, Kansas City.

To Camp Jackson, S. C., Lieut. J. P. BURKE, Jr., California.

To Camp MacArthur, Texas., Lieut. R. H. BURNEY, Kansas City.

To Camp Travis, Texas, base hospital, Capt. A. W. GIFFORD, Springfield.

To Fort Oglethorpe for instruction, Capts. B. G. BENSON, D. B. GARSTANG, G. W. KOENIG, St. Louis; J. A. SWEARINGEN, Wyaconda; Lieuts. J. T. McLARNEY, Brookfield; J. H. WILLIAMS, Hume; E. D. TWYMAN, Independence; A. L. HEARST, H. F. VANORDEN, J. E. WATTENBERG, Kansas City; L. I. SHUCK, Nelson; B. F. MAY, St. Louis.

To Fort Omaha, Neb., Lieut. H. C. KIMBERLIN, Trenton.

To Fort Riley for instruction, Capts. A. J. McNEES, Clinton; H. A. BREYFOGLE, H. H. LANE, Kansas City; T. J. RAGSDALE, Lee's Summit; E. BARRYMORE, Silex; E. W. EBERLEIN, St. Louis; Lieuts. W. C. ANDERSON, A. G. KOCH, Kansas City.

To New Haven, Conn., Yale Army Laboratory School, for instruction, Capt. F. COHEN, Kansas City.

Montana

To Camp Lewis, Wash., Capt. J. M. SCANLAND, Warm Springs.

To Camp Sherman, Ohio, Lieut. H. J. McGREGOR, Choteau.

To Fort Omaha, Neb., Lieut. P. A. SCHULBERG, Rudyard.

To Fort Riley for instruction, Capt. J. I. WERNHAM; Lieuts. J. D. BARRETT, Billings; F. E. ABBOTT, Broadview; C. W. BICE, Great Falls; T. L. COCKRELL, Hindale.

To Helena, Mont., as medical aide, Capt. E. G. BALSUM, Billings.

To report to the commanding officer, Western Department, Lieut. E. F. ROSS, Harlowton.

Nebraska

To Fort Oglethorpe for instruction, Capt. L. RILEY, Wisner; Lieut. J. J. SRB, Dwight.

To Fort Omaha, Neb., Lieut. L. C. HILSABECK, Gretna.

New Hampshire

To Fort Oglethorpe for instruction, Capt. C. B. COTTON, Woleboro; Lieut. M. H. TOWLE, Manchester.

New Jersey

To Camp A. A. Humphreys, Va., camp hospital, Capt. J. M. JONES, Jersey City.

To Camp Colt, Pa., Lieut. F. L. BIRD, Netcong.

To Camp Jackson, S. C., Lieuts. C. H. CANNING, Atlantic City; E. J. CHAPMAN, Jersey City.

To Camp Meade, Md., Capt. G. W. LAWRENCE, Lakewood.

To Camp Upton, N. Y., base hospital, Lieut. C. TEN BROECK, Princeton.

To Fort Oglethorpe for instruction, Capts. E. ACKERMANN, Dover; G. S. WILLIS, Morristown; C. W. EVELETH, West Orange; Lieuts. W. P. DAVIS, Jr., Atlantic City; R. W. RANDALL, Hackettstown; M. AURIEMMA, Hoboken; P. BRANCATO, C. B. RUSSELL, F. J. T. WAS, Paterson; W. H. McCORMICK, Jr., Perth Amboy; H. H. BOWLES, Summit; J. M. MacKELLAR, Tenafly; P. A. D'ACIERENO, West Hoboken.

To New Haven, Conn., Yale Army Laboratory School, for instruction, Capt. W. F. CIMIOTTI, West Hoboken.

To report to the commanding officer, Eastern Department, Lieut. A. STAHL, Newark.

To Washington, D. C., St. Elizabeth's Hospital, Capt. D. E. WARREN, Passaic; Lieut. E. H. SNAVELY, Cedar Grove.

New Mexico

To Leon Springs, Texas, Lieut. J. H. SANFORD, Socorro.

New York

To Camp A. A. Humphreys, Va., Capts. G. L. BRANCH, Catskill; T. F. DeNAOULEY, New York; Lieuts. R. F. BLISS, Brooklyn; A. GOLDBERG, Rockaway Beach. Camp hospital, Capt. A. A. EPSTEIN, New York.

To Camp Devens, Mass., base hospital, Capt. F. W. SEYMOUR, Rochester; Lieuts. E. F. WALSH, R. H. WHITCHER, New York.

To Camp Dix, N. J., Lieut. R. O. BAKER, Montour Falls. Base hospital, Lieut. S. B. DOYLE, Brooklyn.

To Camp Gordon, Ga., base hospital, Lieut. W. J. McNERNEY, Syracuse.

To Camp Greene, N. C., base hospital, Capt. I. H. ALEXANDER, New York.

To Camp Jackson, S. C., Lieut. C. W. JOHNSON, Mount Vernon.

To Camp Meade, Md., Capts. F. M. BOYLE, Buffalo; J. S. WILSON, Poughkeepsie; Lieuts. E. E. BABCOCK, Adams Center; W. W. HALL, Henderson.

To Camp Sevier, S. C., Capt. J. G. MORRIS, Groveland Station.

To Camp Shelby, Miss., base hospital, Lieut H. D. MANLEY, New York.

To Camp Sherman, Ohio, Lieut. J. R. FOSHAY, Peekskill.

To Camp Wadsworth, S. C., Capt. B. P. ALLEN, Oriskany; Lieuts. E. A. DAWSON, Brooklyn; H. T. CRONK, New York.

To Columbia, S. C., base hospital, Lieut. H. R. MIXSELL, New York.

To Edgewood, Md., Lieut. J. M. HALL, New York.

To Fort Oglethorpe for instruction, Major F. T. ROBESON, New York; Capts. C. A. LUBRECHT, Brooklyn; L. HENDEE, Buffalo; A. MARK, Elmira; M. L. HAVILAND, Glens Falls; H. E. MERRIAM, Ithaca; F. A. WICKER, Livonia; J. J. SINNOTT, Mount Vernon; E. C. THOMPSON, Newburgh; T. FARNAM, New York; M. I. STEARNS, Ogdensburg; T. F. FOREMAN, J. H. KEVAND, A. S. RULAND, Syracuse; Lieuts. E. R. RICHIE, Brewster; H. C. FUHRMAN, A. E. GILMARTIN, B. GROSS, W. J. DURKIN, O. J. RUZICKA, E. G. SILVERMAN, M. R. SIUDZINSKI, Brooklyn; R. P. HIGGINS, Cortland; G. M. GLENN, Fonda; F. J. LEONARD, Ilion; S. BRODY, H. M. COX, A. EISENBUD, S. EPSTEIN, C. GLUCK, I. MILLER, M. SOLETSKY, M. B. SPONSLER, W. H. STANDER, New York; F. A. TREIBER, Port Jarvis; G. H. CLARK, E. B. COOK, J. G. HART, Rochester; C. L. SCHLOSSOR, Syracuse; H. W. JONES, Utica; E. R. GLADSTONE, Walton.

To Fort Porter, N. Y., Capt. A. J. CAPRON, Oswego.

To Fort Totten, N. Y., Lieut. H. KLARFELD, New York.

To Lakehurst, N. J., Lieut. J. BLINDER, Brooklyn.

To Lakewood, N. J., Lieut. L. FRISCHMAN, Yonkers.

To New Haven, Conn., Lieut. C. M. MANN, Petersburg. Yale Army Laboratory School, for instruction, Capts. H. GREELEY, Brooklyn; E. MOSCHCOWITZ, New York; W. H. VEEDER, Rochester; Lieut. J. H. GLOBUS, New York.

To Plattsburg Barracks, N. Y., Capt. D. S. SPELLMAN, Ward's Island; Lieuts. J. E. BURKE, Schenectady; P. M. CHAMPLIN, Syracuse.

To report to the commanding officer, Eastern Department, Capt. E. E. WILSON, Lieut. S. G. BLUM, Brooklyn.

To Rockefeller Institute, Lieut. E. G. STILLMAN, New York.

To Washington, D. C., St. Elizabeth's Hospital, Lieut. T. J. VOSBURGH, Warwick.

North Carolina

To Camp Greene, N. C., Capt. F. A. CARPENTER, Statesville; Lieuts. C. M. BYMUN, Goldston; J. B. HAGAMAN, Todd.

To Camp Sevier, S. C., Lieut. S. S. IRVIN, Vanceboro.

To Camp Wadsworth, S. C., base hospital, Lieut. M. H. BRAWLEY, Salisbury.

To Fort Oglethorpe for instruction, Lieuts. F. B. SPENCER, Salisbury; T. C. KERNS, West Durham.

To New York, Neurological Institute, for instruction, Capt. N. D. BITTING, Durham.

North Dakota

To Fort Oglethorpe for instruction, Lieut. J. P. MILLER, Mandan.

To Fort Riley for instruction, Capt. D. A. FISK, Carpio.

Ohio

To Camp A. A. Humphreys, Va., Lieut. W. E. BLAIR, Lebanon.

To Camp Custer, Mich., Capt. G. W. WOODS, Columbus; Lieuts. F. M. OXLEY, Cincinnati; E. F. BRANDON, Edon. Base hospital, Capt. W. A. GOING, Toledo.

To Camp Dix, N. J., Lieut. E. S. FOLK, Canton.

To Camp Grant, Ill., Lieuts. D. THOMAS, Lorain; R. A. DALBEY, Youngstown.

To Camp Greene, N. C., Lieuts. A. M. DUNLAP, Cleveland; I. S. WILLIAMS, Massillon; H. H. AUSTIN, Springfield; A. P. SMYTH, Youngstown.

To Camp Jackson, S. C., Lieut. H. S. RHU, Marion. Base hospital, Capt. E. H. PORTER, Tiffin.

To Camp Meade, Md., Lieuts. W. G. STINCHCOMB, Bellefontaine; J. R. PARRY, Lima.

To Camp Sevier, S. C., Lieuts. L. F. MUTSCHMAN, Alliance; F. E. SEXTON, Cleveland; J. J. HEATON, McCutchenville; B. L. CASEY, Toronto; O. D. CRITCHFIELD, West Unity

To Camp Sherman, Ohio, Lieuts. W. C. LANGDON, Cincinnati; J. B. POLING, Lima; F. E. MAHLA, Marion; I. D. BAXTER, Spencerville. Base hospital, Lieut. S. S. QUITTNER, Cleveland.

To Camp Zachary Taylor, Ky., Lieuts. C. E. EXLINE, Canton; R. H. FIRTH, Dayton.

To Fort Oglethorpe for instruction, Capts. G. F. McKIM, Cincinnati; C. E. Welch, Nelsonville; L. A. LEVISON, Toledo; E. M. BROWN, Zanesville; Lieuts. G. P. RIEBEL, Ashland; H. A. MARCH, Canton; D. W. PALMER, H. M. SCHNEIDER, Cincinnati; E. V. BISHOP, H. A. BUDD, E. D. ROSEWATER, Cleveland; J. M. BOWMAN, J. G. SHERMAN, H. R. WRIGHT, Columbus; W. H. SWISHER, Dayton; G. HARTNAGEL, Delphos; W. R. CRUME, Gratis; D. C. FOX, Kenton; G. W. PULLEN, Jr., Lakewood; R. M. BLAIR, Lebanon; E. B. SCHNEIDER, Norwood; E. A. YATES, Piqua; S. L. ZURMEHLY, Rushsylvania; J. S. TETER, Toledo; J. S. SHINN, Troy; L. W. POTTS, Warrensville.

To New Haven, Conn., for instruction, Lieut. H. J. POWELL, Bowling Green. Yale Army Laboratory School, for instruction, Lieut. F. W. RILEY, Akron.

To report to the commanding officer, Eastern Department, Lieut. F. F. BARGER, Urbana.

Oklahoma

To Camp Logan, Texas, Capt. D. M. LAWSON, Nowata; Lieut. H. J. WEEDN, Sasakwa.

To Camp MacArthur, Texas, Capt. A. T. HILL, Tamaha; Lieuts. J. T. MORELAND, Idabel; W. A. SIBLEY, Tar River; A. W. PIGFORD, Tulsa; E. B. THOMASSON, Velma.

To Fort Oglethorpe for instruction, Lieut. R. E. WAGGONER, Pawnee.

To Fort Riley for instruction, Capt. H. M. STRICKLEN, Tonkawa; Lieuts. L. H. RITZHAUPT, Guthrie; J. N. HARBER, Mekusukey.

Oregon

To Camp Lewis, Wash., Lieuts. B. BLACKFORD, A. K. HIGGS, Portland.

Pennsylvania

To Camp Colt, Pa., Capt. O. T. CRUIKSHANK, Pittsburgh.

To Camp Dix, N. J., Capts. F. C. DUVALL, Monessen; L. C. FULTON, W. J. LAND, Pittsburgh.

To Camp Jackson, S. C., Lieut. S. M. WINTER, Duryea.

To Camp Meade, Md., Lieut. P. K. HELLER, Dixmont. Base hospital, Capts. W. B. KENWORTHEY, Milford; A. J. WAGERS, Lieut. W. J. CREIGHTON, Philadelphia.

To Camp Sevier, S. C., Capt. W. C. WILSON, Morris Run; Lieuts. R. G. FURLONG, Donora; W. H. HUBER, Glenside.

To Camp Wadsworth, S. C., Lieuts. S. S. JORDAN, McKeesport; R. M. JOHNSTON, New Kensington; L. F. KROH, Rural Valley.

To Camp Zachary Taylor, Ky., Capt. J. S. DeMUTH, Pittsburgh.

To Fort Bliss, Texas, base hospital, Capt. J. W. McKENNAN, Washington.

To Fort Oglethorpe for instruction, Capts. E. M. COWELL, Athens; W. A. McCALL, Butler; W. O. WILSON, Clearfield; J. L. IRELAND, Erie; L. C. SMITH, Lawrenceville; H. H. BIRNEY, C. E. TEGTMEIR, Philadelphia; F. C. S. BLESSING, A. J. HESSER, Pittsburgh; J. B. ROGERS, Pottsville; J. H. RORKE, Reading; C. FALKOWSKY, Jr., Scranton; Lieuts. W. E. LOFTUS, Carbondale; C. W. JOHNSTONE, DuBois; J. L. McBRIDE, Emsworth; R. S. HINCHMAN, McKeesport; R. GOODMAN, L. H. JACOB, J. D. SCHOFIELD, A. STRAUSS, Philadelphia; A. W. BARKLEY, J. E. FLINN, H. M. GANGLOFF, H. C. HIEBER, Pittsburgh; S. L. DRIEBELBIS, Reading; W. M. YOST, Rochester; J. B. MILLER, Sligo; B. W. GENUNG, Ulysses; A. I. SLAGLE, Vandergrift; D. A. RUPERT, Webster.

To Fort Totten, N. Y., Lieut. S. GOLDBERG, McKeesport.

To Pittsburgh, Pa., Lieut. C. J. BOWEN, Pittsburgh.

To Plattsburg Barracks, N. Y., Majors T. H. WEISENBURG, Philadelphia; C. H. HENNINGER, Pittsburgh.

To report to the commanding general, Hoboken, N. J., Lieut. H. S. WEIGLE, Muncy.

To Washington, D. C., St. Elizabeth's Hospital, Lieuts. C. A. KOENIG, C. A. LEY, Pittsburgh.

Rhode Island

To Camp Devens, Mass., Lieut. C. H. GANNON, Howard.

To Camp Dix, N. J., Capt. F. R. JENKS, Lieut. J. V. CHATIGNY, Pawtucket.

To Camp Jackson, S. C., Lieut. H. C. MESSINGER, Providence.

To Camp Meade, Md., base hospital, Lieut. J. E. McCABE, Providence.

To Camp Wadsworth, S. C., Lieut. C. B. O'ROURKE, Providence.

To Fort Oglethorpe for instruction, Lieut. P. H. RUSHTON, Providence.

To New Haven, Conn., Yale Army Laboratory School, for instruction, Capt. H. G. PALMER, Providence.

South Carolina

To Camp Jackson, S. C., Lieut. W. R. WYNNE, Charleston. Base Hospital, Capt. W. WESTON, Jr., Columbia.

To Camp Sevier, S. C., base hospital, Lieut. W. E. MILLS, Sumter.

To Camp Wadsworth, S. C., base hospital, Lieut. S. C. DEAN, Anderson.

To Fort Oglethorpe for instruction, Capt. H. W. De SAUSSURE, Charleston.

South Dakota

To Fort Oglethorpe for instruction, Lieut. H. H. CORNFORTH, Hot Springs.

To Fort Riley for instruction, Lieut. A. A. SORENSEN, Aberdeen.

Tennessee

To Camp Jackson, S. C., Lieut. W. B. EASON, Bells.
To Camp MacArthur, Texas, Lieut. H. P. RIEGER, Nashville.
To Camp McClellan, Ala., Lieut. R. WEBB, St. Bethlehem.
To Camp Sevier, S. C., Lieut. J. F. GOFF, Chesterfield.
To Camp Sheridan, Ala., Lieut. A. J. GUINN, Ducktown.
To Camp Sheridan, Ala., Lieut. A. J. GUINN, Ducktown.
Capts. D. GERMAN, Franklin;
To Fort Oglethorpe for instruction, Lieuts. H. L. CARROLL, Knoxville;
J. A. HARDISON, Lewisburg; Lieuts. H. L. CARROLL, Knoxville;
J. D. CARLTON, Union City.
To Fort Riley for instruction, Lieut. L. C. HARRIS, Mockeson.
To New Haven, Conn., Yale Army Laboratory School, for instruction,
Lieut. W. F. LAKE, Chattanooga.

Texas

Lieut. J. H. BARNETT, Walnut Springs.
To Camp John Wise, Texas, J. W. GERMANY, Ennis; T. B.
To Camp Logan, Texas, Capts. MacNELLY, Weatherford; J. H.
ASKOW, San Antonio; C. M. WEBSTER, Athens; G. L. EADS,
THOMAS, West; Lieuts. J. K. STURGES, Springtown.
Marshall; E. O. NICHOLS, Plainview; S. I. MACKEY, Fort Worth;
To Camp MacArthur, Texas, Capts. W. H. KLIEFETH, Blanco; E. G.
O. R. MARSHALL, Moody; Lieuts. F. H. MASTERS, Knox
SMITH, Gatesville; R. A. DUNCAN, Graham; W. J. Major H. B.
City; H. A. WINTER, Port Arthur. Base hospital,
JESTER, Corsicana. base hospital, Capt. F. W. SORELL, San
To Camp Travis, Texas,
Antonio.
To Canal Zone, Lieut. T. T. PARKER, San Antonio.
To Dallas, Texas, Love Field, Lieuts. F. E. STONE, Paducah; J. A.
McCONNELL, Poolville.

To Fort Oglethorpe for instruction, Capt. J. VANCE, El Paso; Lieuts. L. SCHELLER, Beaumont; L. F. BLAND, R. H. MILLWEE, Dallas; M. B. BADT, Fort Worth; R. C. WHIDDON, Gainesville.

To Leon Springs, Texas, Lieuts. T. H. BLACKWELL, Dickens; A. C. SURMANN, Post.

Utah

To Camp Kearney, Calif., Lieut. C. F. SWANSON, Milford.

To Camp Pike, Ark., Lieut. G. H. CHRISTY, Vernal.

To Fort Oglethorpe for instruction, Lieut. H. R. HATCH, Heber.

To Fort Riley for instruction, Lieut. H. FINCH, Park City.

Vermont

To Fort Oglethorpe for instruction, Lieut. W. H. CLANCY, Burlington.

Virginia

To Camp Greene, N. C., Lieuts. H. S. HENKEL, Brownsburg; J. J. CRUMM, Louisa; C. B. FOX, Monterey.

To Camp Lee, Va., Lieut. J. B. MUNCY, Richmond.

To Camp Meade, Md., Capt. T. A. KIRK, Roanoke.

To Camp Sevier, S. C., Lieut. S. R. JORDAN, Virgilina.

To Camp Sherman, Ohio, for instruction, Lieut. W. A. McGOWAN, Richmond.

To Fort Oglethorpe for instruction, Capts. W. H. SAUNDERS, Roanoke; P. W. BOYD, Winchester; Lieuts. W. S. FERGUSON, Lynchburg; J. L. GRANT, Midland; J. H. MABRY, Newport News; R. W. STONEBURNER, Toms Brook.

Washington

To Camp Lewis, Wash., Capt. G. A. DAVIS, Redmond. Base hospital, Capts. E. C. LEE, Seattle; F. R. FURSEY, *Spokane; Lieut. J. W.* MITCHELL, Seattle.

To Fort Riley for instruction, Lieut. E. M. BEVIS, Republic.

To New York, Neurological Institute, Lieut. L. R. QUILLIAM, Seattle.

To San Francisco, Calif., Lieut. J. H. EGAN, Tacoma.

West Virginia

To Camp Greene, N. C., Lieut. R. K. BRAGONIER, Shepherdstown.

To Camp Meade, Md. Lieut. J. A. STRIEBICH, Moundsville. Base hospital, Capt. S. H. PHILLIPS, Charleston.

To Camp Sherman, Ohio, base hospital, Lieut. I. FAWCETT, Wheeling.

To Fort Oglethorpe for instruction, Capt. W. L. VAN SANT, Hinton; Lieut. F. E. MARTIN, New Martinsville.

Wisconsin

To Fort Oglethorpe for instruction, Capt. O. H. FOERSTER, Milwaukee; Lieuts. F. L. GRISWOLD, *Mazomaine;* J. H. CARROLL, Milwaukee; W. C. COMEE, Seymour.

To Fort Riley for instruction, Capt. M. A. BAILEY, Fennimore; Lieuts. J. M. ROSS, Bloom City; F. H. BALDWIN, Bloomington; W. J. WALDSCHMIDT, Fond du Lac; R. R. RATH, Granton; R. C. GODFREY, Lancaster; R. C. WESTHOFEN, *Milwaukee;* G. A. NATVIG, Prairie Farm; G. W. CURLESS, Walworth.

Wyoming

To Fort Riley for instruction, Lieut. W. H. HASSED, Lusk.

ORDERS TO OFFICERS OF THE MEDICAL CORPS, U. S. ARMY

Alabama

To Camp Beauregard, La., from Camp Forrest, Lieut. H. BOXER, Birmingham.

To Camp Crane, Pa., from Camp Sheridan, Lieut. H. F. McLAURINE, Fitzpatrick.

To Camp Greene, N. C., base hospital, from Camp McClellan, Lieut. C. D. MYERS, Birmingham.

To Camp Upton, N. Y., base hospital, from Fort McPherson, Lieut. E. C. SINIARD, Birmingham.

To Fort Oglethorpe for instruction, Lieut. J. A. USSERY, Courtland.

Arizona

To Camp Custer, Mich., base hospital, from Camp Travis, Capt. V. A. SMELKER, Nogales.

To Camp Logan, Texas, from Fort Riley, Lieut. R. E. POOLE, Mayer.

To Denver, Colo., from New Haven, Lieut. E. J. RICHSTEIN, Bisbee.

To Fort Snelling, Minn., base hospital, from Camp Fremont, Lieut. W. O. SWEEK, Phoenix.

Arkansas

To Camp Crane, Pa., from Camp Fremont, Lieut. T. W. SANDERS, Hot Springs.

To Camp Logan, Texas, from Fort Riley, Lieut. C. V. POWELL, Round Pond.

To Camp Newton D. Baker, Texas, base hospital, from Camp MacArthur, Capt. O. J. T. JOHNSTON, Batesville.

To Fort Benjamin Harrison, base hospital, from Camp Pike, Major F. VINSONHALER, Little Rock.

To New Haven, Conn., from Camp Jackson, Capt. E. E. HOLT, Mena.

California

from Army Medical School, Lieut. T. L.
To Camp Crane, Pa., from Camp Fremont, Lieuts. A. L. COHN,
ROGERS, Long Beach; from Camp Lewis, Capt. H. K.
W. E. KAY, Jr., San Francisco; from Camp Lewis, Lieut. M. B. WOLFF, San
FABER, San Francisco; from New Haven, Lieut. M. B. WOLFF, San
Francisco.
To Camp Greene, N. C., base hospital, from Camp Bowie, Capt. J. L.
LOHSE, Oakland.
To Camp Kearney, Calif., Lieuts. F. E. McCANN, Corning; W. W.
TOURTILLOTT, Lindsay; J. A. McKENNEY, Parlier; from Fort
Riley, Capts. R. MOTHERAL, Hanford; M. CAMPBELL, Los Angeles;
L. GRAHAM, Wagner; Lieuts. M. CLEEVES, S. A. MARSDEN,
Los Angeles. Base hospital, Capt. P. A. JORDAN, San Jose; and
for instruction, Capt. S. M. MILLER, Los Angeles.

To Camp Logan, Texas, from Fort Riley, Lieut. E. R. HARVEY, Long Beach.

To Camp Sherman, Ohio, base hospital, from Camp Jackson, Capt. J. EAVES, San Francisco.

To Camp Upton, N. Y., from Camp Kearney, Major R. B. WILLIAMS, San Francisco.

To Fort Douglas, Utah, from Camp Lewis, Capt. W. B. DEAS, San Francisco.

To Fort Oglethorpe, evacuation hospital, from San Francisco, Major P. M. THOMAS, San Francisco. For instruction, from Fort Riley, Lieut. F. C. SWEARINGEN, Pomona.

Canal Zone

To Newport News, Va., from Fort Oglethorpe, Lieut. W. C. GIBSON, Pedro Miguel.

Colorado

To Azalea, N. C., from New Haven, Capt. S. SIMON, Denver.

To Camp Kearney, Calif., from Fort Riley, Capts. H. J. HOLLISON, Denver; B. B. BLOTZ, Rocky Ford.

To Camp Sherman, Ohio, base hospital, from Camp Wadsworth, Capt. L. H. McKINNIE, Colorado Springs.

To Denver, Colo., from New Haven, Capt. M. J. KEENEY, Pueblo.

To Walter Reed General Hospital, D. C., Lieut. J. F. WILLIAMS, La Junta.

Connecticut

To Camp McClellan, Ala., as tuberculosis examiner, from Camp Jackson, Lieut. T. P. MURDOCK, Meriden.

To Camp Sevier, S. C., as tuberculosis examiner, from Camp Jackson, Lieut. M. C. BECK, Bridgeport.

To Camp Upton, N. Y., base hospital, from Walter Reed General Hospital, Lieut. S. MAISLEN, Hartford.

Honorably discharged, on account of physical disability existing prior to entrance into the service, Capt. W. H. GRAY, Mystic.

District of Columbia

To Camp Crane, Pa., from Camp Jackson, Lieut. S. R. KARPELES, Washington.

To Fort Benjamin Harrison, base hospital, from Camp Custer, Capt. H. L. SCHURMEIER, Washington.

To Rockfeller Institute for instruction in the treatment of infected wounds, and on completion *to Camp Meade, Md.,* base hospital, from Washington, Major R. Y. SULLIVAN, Washington.

Florida

To Lakewood, N. J., for instruction, Lieut. A. J. WOOD, St. Petersburg.

Georgia

To Camp Crane, Pa., from Fort McPherson, Major W. A. CHAPMAN, Cedartown.

To Camp Joseph E. Johnston, Fla., Capt. H. RESPESS, Mason; Lieuts. C. G. HOOTEN, Bronwood; W. A. HARRISON, Sycamore.

To Camp Meade, Md., evacuation hospital, Capt. J. H. BUTLER, Augusta.

To Camp Sevier, S. C., from Fort Oglethorpe, Lieut. F. J. GIUFFRIDA, Atlanta.

To Camp Sherman, Ohio, base hospital, from Fort Oglethorpe, Lieuts. T. B. WILSON, Brunswick; S. T. R. REVELL, Louisville.

To Fort Oglethorpe, evacuation hospital, from Camp Sheridan, Capt. W. R. DANCY, Savannah.

To Lakewood, N. J., for instruction, and on completion *to his proper station,* from Camp Wadsworth, Major J. W. DANIEL, Savannah.

Illinois

To Camp A. A. Humphreys, Va., Lieut. F. E. SENEAR, Chicago.

To Camp Crane, Pa., from Army Medical School, Lieut. H. E. LUTYENS, Farmingdale; from Camp Custer, Capt. E. L. HENDRICKS, Lanark; from Camp Dix, Lieut. H. L. SCHULTZ, Decatur; from Camp Grant, Lieuts. L. C. BASSETT, Farina; A. A. MERT, Pawnee; from Camp Sheridan, Capt. F. C. WALSH, Rock Island; from Camp Wheeler, Lieut. J. H. EDGCOMB, Ottawa.

To Camp Knox, Ky., from Fort Oglethorpe, Lieut. G. D. BRAND, Chicago.

To Camp Newton D. Baker, Texas, base hospital, from Camp Bowie, Lieut. J. F. BOONE, Chicago.

To Camp Sevier, S. C., from Lakewood, N. J., Lieuts. C. J. McMULLEN, E. F. MIELKE, Chicago.

To Camp Sherman, Ohio, base hospital, from Camp Zachary Taylor, Lieut. T. G. CHARLES, Beardstown; from Fort Oglethorpe, Capt. W. W. VAN WORMER, Springfield.

To Camp Zachary Taylor, Ky., base hospital, from Camp Dodge, Major W. G. ALEXANDER, Evanston.

To Denver, Colo., from New Haven, Capt. H. C. MILLER, Chicago; Lieuts. E. LEVY, Chicago; V. MAURICAN, Rockton.

To Fairfield, Ohio, Wilbur Wright Field, from Middletown, Pa., Capt. C. L. MONTGOMERY, Blue Mound.

To Fort Benjamin Harrison, base hospital, from Camp Dodge, Lieut. M. S. COFFLER, Chicago.

To Fort Oglethorpe, evacuation hospital, from Camp Gordon, Lieut. J. M. WASHBURN, Chicago. For instruction, Lieut. H. C. FORTUNE, Rochester.

To Fort Riley to examine the command for nervous and mental diseases, from Jefferson Barracks, Capt. E. Z. LEVITIN, Peoria.

To Fort Snelling, Minn., base hospital, from Camp Grant, Lieut. A. S. SANDLER, Chicago.

To Fort Thomas, Ky., from Lakewood, N. J., Lieut. G. H. ANDERSON, Chicago.

To Jefferson Barracks, La., to examine the command for nervous and mental diseases, from Camp Sheridan, Capt. W. K. DYER, Kankakee.

To Lakewood, N. J., for instruction, Lieut. E. S. MELOY, Highland.

To Newport News, Va., from Camp Dodge, Capt. L. W. ROSENBAUM, Chicago.

To Washington, D. C., for consultation, and on completion *to Fort Oglethorpe,* as instructor, from Fort Riley, Capt. E. W. RYERSON, Chicago.

To Waynesville, N. C., from New Haven, Capt. A. R. TRAPP, Springfield.

Indiana

To Camp Crane, Pa., from Camp Grant, Lieuts. V. GORDON, Bluntsville; J. F. SWAYNE, Mecca; from Camp Hancock, Capt. C. C. DUBOIS, Warsaw; from Camp Sevier, Lieut. E. G. WINTER, Indianapolis; from Camp Wadsworth, Lieut. C. H. BRUNER, Greenfield; from Fort Omaha, Capt. B. W. RHAMY, Fort Wayne.

To Camp Grant, Ill., from Fort Oglethorpe, Capts. J. W. BENHAM, Columbus; J. T. McFARLIN, Williams.

To Camp Greene, N. C., base hospital, from Camp Beauregard, Lieut. H. L. COOPER, South Bend.

To Camp Hancock, Ga., base hospital, from Camp Beauregard, Lieut. H. H. JONES, Salamonia.

To Camp Kearney, Calif., from Fort Riley Lieuts. E. C. GRAY, Greensburg; H. S. BOWLES, Muncie.

To Camp Knox, Ky., from Fort Oglethorpe, Lieut. E. E. BROCK, Anderson.

To Camp Lee, Va., from Fort Oglethorpe, Lieut. C. C. MARSHALL, Aurora.

To Fort Benjamin Harrison, base hospital, from Camp Travis, Capt. H. ELLIOTT, Brazil.

To Hoboken, N. J., base hospital, from Camp Custer, Capt. J. C. GLACKMAN, Hatfield.

To Lakewood, N. J., for instruction, Lieut. G. N. DRULEY, North Webster.

Iowa

To Camp Greene, N. C., from Camp Meade, Lieut. G. H. STEELE, Belmond. Base hospital, from Camp Bowie, Capt. P. E. SAWYER, Sioux City.

To Camp Hancock, Ga., base hospital, from Camp Shelby, Capt. C. A. KATHERMAN, Sioux City.

To Camp Kearney, Calif., from Fort Riley, Capt. H. M. HOAG, Mason City.

To Camp Logan, Texas, from Fort Riley, Capt. A. M. SHERMAN, Clarinda; Lieut. F. H. DIERKER, West Point.

To Camp Newton D. Baker, Texas, base hospital, from Camp Bowie, Lieut. W. C. HAND, Hartley.

To Fort Benjamin Harrison, base hospital, from Camp Cody, Capt. E. L. ROHLF, Waterloo.

To Lakewood, N. J., for instruction, Lieut. J. B. KNIPE, Armstrong.

To Waynesville, N. C., from New Haven, Capt. S. C. BUCK, Grinnell.

Kansas

To Camp Crane, Pa., from New York, Lieut. E. H. SCHLEGEL, Wichita.

To Camp Grant, Ill., from Fort Oglethorpe, Lieut. L. J. PIERCE, Englewood.

To Camp Kearney, Calif., from Fort Riley, Capt. W. DOSTER, Coldwater.

To Camp Logan, Texas, from Fort Riley, Capt. C. L. RANDALL, Neodesha.

To Camp Newton D. Baker, Texas, base hospital, from Camp Bowie, Lieut. R. S. PICKLER, Beloit.

To Denver, Colo., from New Haven, Lieut. C. F. ENSIGN, Lawrence.

To Fort Oglethorpe, evacuation hospital, from Camp Beauregard, Lieut. A. J. O'LEARY, Burr Oak; from Fort Logan H. Roots, Capt. M. HAHN, Arkansas City.

To Fort Riley for instruction, Lieut. H. W. GOOTEE, Topeka.

To Jefferson Barracks, Mo., Lieut. D. C. DODDS, Summerfield; from Fort Logan H. Roots, Lieut. A. B. OECHSLI, Stockton.

To Newport News, Va., from Fort Oglethorpe, Capt. J. W. CHENEY, Wichita.

Kentucky

To Camp Joseph E. Johnston, Fla., from Fort Oglethorpe, Lieut. G. G. HUNTER, Covington.

To Camp Pike, Ark., from Camp Bowie, Major G. H. DAY, Louisville.

To Camp Zachary Taylor, Ky., Capt. H. A. DAVIDSON, Louisville.

To Fort Sam Houston, Texas, base hospital, from Camp Hancock, Lieut. Z. G. JONES, Bowling Green.

To Newport News, Va., Lieut. W. LAKE, Simmons.

Honorably discharged on account of physical disability existing prior to entrance into the service, Capts. D. H. DANIEL, Paintsville; A. H. KELLY, Shively.

The following order has been revoked: *To Camp Dodge, Iowa,* base hospital, Lieut. J. E. WILSON, Butler.

Louisiana

To Camp Lee, Va., from Fort Oglethorpe, Lieut. P. T. THIBODAUX, [illegible]

[illegible] evacuation hospital, from Camp Beauregard, [illegible], Bunkie; W. H. HAMLEY, Lake Providence; G. B. DICKSON, Shreveport.

Maine

To Astoria, New York, from Fort Oglethorpe, Lieut. E. G. A. STETSON, Brunswick.

Massachusetts

To Camp A. A. Humphreys, Va., Capt. G. G. SMITH, Boston.

To Camp Crane, Pa., from Camp Devens, Capts. R. H. VOSE, Boston; W. J. HARKINS, Quincy; from Camp Dix, Lieut. N. B. McWILLIAMS, Williamstown.

To Camp Dix, N. J., base hospital, from Lakewood, Lieut. F. C. HALL, Boston.

To Camp Greene, N. C., base hospital, from Camp Sheridan, Lieut. A. H. GALVIN, Springfield.

To Camp Lee, Va., from Fort Oglethorpe, Capt. J. W. CLARKE, Attleboro.

To Camp Sevier, S. C., from Fort Oglethorpe, Lieut. A. E. ST. CLAIR, Framingham. As tuberculosis examiner, from New Haven, Lieut. N. J. HEYWOOD, Williamsett.

To Camp Sherman, Ohio, base hospital, from Fort Oglethorpe, Lieut. F. L. GIBSON, Holyoke.

To Camp Upton, N. Y., base hospital, from Fort McPherson, Lieut. J. M. LYNCH, Boston.

To Fort McHenry, Md., from Camp Lee, Capt. A. M. DODGE, Boston.

To Fort Oglethorpe, evacuation hospital, from Camp Wadsworth, Lieut. R. H. PHILBRICK, East Northfield. For instruction, Lieuts. J. L. DOWLING, L. STRAHLMANN, Boston.

To Mineola, N. Y., Hazelhurst Field, from Cambridge, Major C. S. BUTLER, Boston.

To New Haven, Conn., Yale Army Laboratory School, for instruction, Lieut. F. PARKER, Jr., Bedford; from Rockefeller Institute, Lieut. G. L. BUNNELL, Foxboro.

To New York, Neurological Institute, for instruction, Lieut. S. COBB, Cotuit.

Michigan

To Camp Sherman, Ohio, base hospital, from Camp Lee, Lieut. L. O. SHAW, Detroit.

To Camp Zachary Taylor, Ky., Lieut. M. C. HUBBARD, Vestaburg.

To Columbia, Ohio, from Columbus Barracks, Capt. B. F. A. CRANE, Saginaw.

To Fort Riley for instruction, Capt. J. W. BACHELOR, Oxford.

Minnesota

To Camp Cody, N. M [illegible] aminer, from Vancouver Barracks, Lieut. L. W. P [illegible]

To Camp Crane, Pa., [illegible] Lieut. J. A. DAHL, Minneapolis.

To Camp Custer, Mich., base hospital, from Camp Dodge, Lieut. T. GRATZEK, St. Paul.

To Camp Logan, Texas, from Fort Riley, Capt. J. V. JOHNSON, Morgan Park; Lieut. E. A. RUMREICH, Mahnomen.

To Camp Sevier, S. C., from Fort Oglethorpe, Lieut. G. W. DAHLQUIST, Lancaster.

To Fort Benjamin Harrison, base hospital, from Fort Riley, Capt. K. H. SCHMIDT, Minneapolis.

To Fort Oglethorpe for instruction, from Fort Riley, Capt. M. J. KERN, St. Cloud.

To report to the governor of the Panama Canal, from Camp Pike, Major H. G. BICKFORD, Minneapolis.

To Washington, D. C., Capt. C. L. GREENE, St. Paul. Surgeon-General's Office, from Rochester, Col. C. H. MAYO, Rochester.

To Waynesville, N. C., from New Haven, Capt. R. I. HUBERT, St. Paul.

The following order has been revoked: *To Camp Meade, Md.*, from Camp Lee, Major J. C. SESSIONS, Minneapolis.

Mississippi

To Camp Dix, N. J., base hospital, from Lakewood, Lieut. R. L. BEADLES, Coffeeville.

To Camp Grant, Ill., from Fort Oglethorpe, Capt. J. B. MAGEE, Prentiss.

To Camp Joseph E. Johnston, Fla., Lieut. D. S. SMITH, Rodney.

To Camp Logan, Texas, from Fort Riley, Lieut. J. D. WINTER, Stover.

To Denver Colo., from New Haven, Lieut. B. C. BERNARD, Indianola.

Honorably discharged on account of physical disability not incurred in line of duty, Lieut. M. PORTER, Water Valley.

Missouri

To Camp Dick, Texas, from Mineola, Capt. A. L. LUDWICK, Kansas City.

To Camp Forrest, Ga., Lieut. C. A. KELLY, St. Louis.

To Camp Greene, N. C., base hospital, from Camp McClellan, Capt. A. G. WICHMANN, St. Louis.

To Camp Kearney, Calif., from Fort Riley, Capts. J. F. KOOGLER, Kansas City; E. C. HILL, Smithville; Lieut. E. F. KEARNEY, Oregon.

To Camp Logan, Texas, from Fort Riley, Capts. E. H. CARPENTER, Helena; W. E. RUDD, Salem; Lieuts. W. E. LOCKWOOD, Potts; C. A. TUCKER, Springfield; N. N. YAHLEM, St. Louis; C. E. BENHAM, Tarkio.

To Camp McClellan, Ala., base hospital, from Camp Pike, Capt. M. L. UNDERWOOD, St. Joseph.

To Camp Sevier, S. C., as tuberculosis examiner, from Camp Jackson, Capt. F. B. SPENCER, Hannibal.

To Camp Sherman, Ohio, base hospital, from Camp Beauregard, Lieut. P. A. BRICKEY, St. Louis.

To Fort Benjamin Harrison, base hospital, from Camp Cody, Capt. L. RASSIEUR, St. Louis; from Camp Travis, Lieut. W. H. WAGNER, Berger.

To Fort Oglethorpe for instruction, Capts. E. R. WALKER, Sedalia; L. C. HERCHENROEDER, St. Louis.

To Jefferson Barracks, Mo., Capt. O. S. McCALL Wheaton.

To Leon Springs, Texas, from Fort Riley, Capt. V. B. JANES, Cameron.

The following order has been revoked: *To Camp Gordon, Ga.*, base hospital, Capt. L. G. BEHRONS, St. Louis.

Montana

To Camp Lewis, Wash., Capt. C. E. BELTZER, Washoe.

To Fort Benjamin Harrison, base hospital, from Camp Kearney, Lieut. J. L. TREACY, Helena.

To Fort Oglethorpe for instruction, Lieut. S. E. LEARD, Livingston.

Nebraska

To Camp Crane, Pa., from Camp Devens, Capt. J. A. HENSKE, Omaha.

To Camp Upton, N. Y., base hospital, from Jefferson Barracks, Lieut. J. C. DAVIS, Jr., Omaha.

To Fort Oglethorpe for instruction, Lieuts. J. H. BOYES, Hebron; D. C. SIGWORTH, Stanton; from Fort Riley, Capt. F. H. KUEGLE, Omaha.

To Fort Riley for instruction, Lieut. F. S. SALISBURY, Broken Bow.

Resignation of Major J. P. LORD, Omaha, accepted.

New Hampshire

To Camp Crane, Pa., from New Haven, Lieut. R. J. BENNETT, Dover.

To Camp Sherman, Ohio, base hospital, from Fort Oglethorpe, Lieut. W. E. SMITH, Franklin.

New Jersey

To Camp Crane, Pa., from Fort Benjamin Harrison, Lieut. E. W. HL, Newark.

To Camp McClellan, Ala., as tuberculosis examiner, from *Camp Dix*, Capt. E. S. KRANS, Plainfield.

To Camp Sevier, S. C., as tuberculosis examiner, from Camp Jackson, Lieut. E. N. COWAN, Merchantville.

To Camp Shelby, Miss., from Camp Logan, Lieut. M. COHEN, Paterson.

To Camp Upton, N. Y., from Fort Oglethorpe, Capt. P. A. POTTER, East Orange.

To Fort Hamilton, N. Y., Lieut. R. G. M. EHLERS, Ocean Grove.

Honorably discharged on account of physical disability existing prior to entrance into the service, Capt. W. H. WARREN, Newark.

The following order has been revoked: *To Camp Wheeler, Ga.*, base hospital, Lieut. A. E. OLPP, West Hoboken.

New Mexico

To Camp Dodge, Iowa, from Fort Des Moines, Capt. G. K. ANGLE, Albuquerque.

To Camp Logan, Texas, base hospital, for instruction, Lieut. F. H. CRAIL, East Las Vegas.

New York

To Camp Cody, N. M., from Fort Riley, Lieut. L. M. VINCENT, New York.

To Camp Crane, Pa., from Army Medical *School, Lieut. G. G.* DAVIS, Arcade; from Camp Devens, Capt. A. H. TERRY, New York; from Camp Lee, Lieut. F. J. CLUNE, Yonkers, from *Camp Sheridan*, Capt. W. *R. THOMSON*, Warsaw; from Fort Oglethorpe, *Lieut.* J. A. BILELLO, Brooklyn; *from New Haven, Lieut.* F. W. PALMER, Buffalo; from Walter Reed General Hospital, Capt. J. E. CONBOY, New York.

To Camp Custer, Mich., base hospital, from Camp Sheridan, Capt. T. H. CURTIN, *New York*; from Camp Sherman, Lieut. T. C. McCOY, New York.

To Camp Fremont, Calif., base hospital, from Camp Lee, Major T. B. SPENCE, Brooklyn.

To Camp Greene, N. C., base hospital, from Camp Jackson, Lieut. A. LACOVARA, New York.

To Camp Joseph E. Johnston, Fla., from Fort Oglethorpe, Capt. G. F. CLARK, *Brooklyn*.

To Camp Lee, Va., Capt. F. N. DEALY, Brooklyn.

To Camp McClellan, Ala., as tuberculosis examiners, from Camp Jackson, Capt. S. A. MAHADY, Utica; from Hoboken, Capt. H. C. DREW, Brooklyn.

To Camp Sevier, S. C., as *tuberculosis examiner, from New* Haven, Lieut. B. C. BULLEN, New York.

To Camp Upton, N. Y., base hospital, from Camp Sevier, Lieut. D. TROPAUER, New York; from Fort McPherson, Lieuts. L. SZERLIP, Rockaway Beach; F. S. O'BRIEN, Wappingers Falls; from Fort Sill, Lieut. A. J. ANDERSON, Long Island City.

To Denver, Colo., from New Haven, Lieut. S. A. BINDERMAN, New York.

To Fort Douglas, Utah, from Camp Lewis, Capt. R. M. JONES, New York.

To Fort Hamilton, N. Y., from Eastern Department, Capt. A. S. DRISCOLL, Staten Island; from New York, Lieut. S. L. SIEGLER, New York.

To Fort Oglethorpe for instruction, Capt. E. C. FASSETT, New York; Lieuts. N. M. McFARLAND, Brooklyn; D. N. COTT, Buffalo; W. J. GIBSON, Rochester.

To Lakewood, N. J., for instruction, Lieut. R. WEST, New York.

To Middletown, Pa., from Fairfield, Ohio, Lieut. M. H. GOLDBERG, Buffalo.

To the retired list, from New York, Lieut.-Col. M. C. WYETH.

Honorably discharged on account of physical disability incurred in line of duty, Capt. A. A. MENDEZ, Brooklyn. On account of physical disability existing prior to entrance into the service, Capt. C. F. KIVLIN, Troy; Lieut. W. W. MILLIAS, Rome.

North Carolina

To Camp Crane, Pa., from Camp McClellan, Lieut. J. W. DAVIS, Statesville.

To Camp McClellan, Ala., as tuberculosis examiner, from Camp Jackson, Capt. J. R. WILLIAMS, Asheville.

To Camp Sevier, S. C., as tuberculosis examiner, from Camp Jackson, Capt. G. B. MORRIS, Mount Olive.

To Camp Sherman, Ohio, base hospital, from Fort Oglethorpe, Capt. M. A. BOWERS, Thomasville; Lieut. W. W. JOHNSTON, Manteo.

To Fort Oglethorpe for instruction, Lieut. M. A. McIVER, Gulf.

North Dakota

To Camp Kearney, Calif., as assistant to camp surgeon, from Fort Oglethorpe, Lieut. A. PEAKE, Grand Forks.

To Fort Benjamin Harrison, base hospital, from Camp Dodge, Lieut. W. S. CHERRY, Enderlin.

Ohio

To Camp A. A. Humphreys, Va., from Fort Oglethorpe, Lieut. H. H. WEBSTER, Dayton.

To Camp Abraham Eustis, Va., as camp surgeon, from Camp Perry, Major A. FREER.

To Camp Crane, Pa., from Camp Custer, Lieut. G. T. MEEK, Columbus; from Camp Dix, Lieut. A. N. SMITH, Columbus; from Camp Grant, Lieut. E. H. McDonald, Bloomingburg.

To Camp Custer, Mich., base hospital, from Camp Grant, Lieut. L. G. SHEETS, Cleveland.

To Camp Dix, N. J., from Fort Oglethorpe, Lieuts. W. J. SMITH, Arcanum; H. L. WELLS, Cambridge.

To Camp Grant, Ill., from Fort Oglethorpe, Capt. E. L. LEONARD, Fulton.

To Camp Greene, N. C., base hospital, from Fort Oglethorpe, Lieut. J. J. SWEENEY, Toledo.

To Camp Hancock, Ga., base hospital, from Fort Oglethorpe, Lieut. R. B. BOWEN, Toledo.

To Camp Knox, Ky., from Fort Oglethorpe, Lieut. E. M. COLLIER, Toledo.

To Camp Lee, Va., from Fort Oglethorpe, Capt. H. W. BLAIR, Mount Vernon; Lieuts. E. P. KENNEDY, Cleveland; W. N. ROGERS, Hamilton.

To Camp Logan, Texas, from Fort Riley, Lieut. M. M. CRITCHLOW, Cincinnati.

To Camp McClellan, Ala., as tuberculosis examiner, from Camp *Dix*, Lieut. C. B. HAMMA, Springfield.

To Camp Meade, Md., to examine the command for nervous and mental diseases, from Camp Shelby, Lieut. C. W. SAWYER, Marion.

To Camp Sevier, S. C., from Fort Oglethorpe, Lieuts. S. A. CONRAD, Leetonia; J. W. CROFT, West Liberty.

To Camp Upton, N. Y., base hospital, from Camp Dix, Lieut. W. L. LATHROP, Metamora.

To Fort Benjamin Harrison, base hospital, from Camp Sherman, Capt. W. C. GATES, Bucyrus.

To Fort Oglethorpe, evacuation hospital, from Camp Beauregard, Lieut. D. H. COLEMAN, Cincinnati; from Camp Wadsworth, Lieut. W. J. GRAF, Cincinnati. For instruction, Lieut. W. A. KOCH, Bucyrus.

To Syracuse, N. Y., from Lakewood, Lieut. R. A. THORNTON, Columbus.

Honorably discharged on account of physical disability existing prior to entrance into the service, Capt. L. FAST, Paulding.

Oklahoma

To Camp Beauregard, La., Lieut. A. A. THURLOW, Norman.

To Camp Crane, Pa., from Camp Sevier, Lieut. R. R. HUME, Minco; from Camp Travis, Lieut. H. B. JUSTICE, Sapulpa; from New Haven, Lieut. E. T. BALLANTINE, Muskogee.

To Camp Custer, Mich., base hospital, from Camp Dodge, Lieut. W. B. CATTO, El Reno.

To Camp Grant, Ill., from Fort Oglethorpe, Lieut. J. ASHLEY, Fletcher.

To Camp Hancock, Ga., base hospital, from Camp Gordon, Capt. H. REED, Oklahoma.

To Camp Kearney, Calif., from Fort Riley, Lieut. E. W. KING, Bristow.

To Camp Meade, Md., evacuation hospital, from Camp Beauregard, Lieut. F. R. FIRST, Cashion.

To Camp Newton D. Baker, Texas, base hospital, from Fort Bliss, Capt. J. A. WALKER, Shawnee.

To Fort Benjamin Harrison, base hospital, from Camp Travis, Lieut. A. W. HARRIS, Muskogee.

To Fort Oglethorpe, evacuation hospital, from Camp Kearney, Capt. O. HOVENDEN, El Reno.

To Fort Reno, Okla., from Fort Sill, Lieut. W. W. D. AKERS, Tyrone.

To New Haven, Conn., Yale Army Laboratory School, for instruction, Capt. W. E. WRIGHT, Tulsa.

Honorably discharged, Lieut. W. C. THRELKELD, Ada.

Oregon

To Camp Crane, Pa., from Camp Lewis, Capt. C. E. SEARS, Portland.

To Fort Riley for instruction, from San Francisco, Major G. E. DARROW, Eugene.

Pennsylvania

To Camp Beauregard, S. C., base hospital, from Camp Jackson, Lieut.-Col. A. C. ABBOTT, Philadelphia.

To Camp Cody, N. M., as tuberculosis examiner, from Vancouver Barracks, Lieut. U. H. REIDT, Jeanette.

To Camp Crane, Pa., from Camp Devens, Lieut. S. J. GLASS, Jr., Pittsburgh; from Camp Hancock, Lieut. J. S. MORGAN, Crafton; from Camp Meade, Lieuts. C. B. LININGER, Erie; J. H BARTLEY, Jr., Philadelphia; from Camp Sheridan, Capt. M. W. REED, Bellefonte.

To Camp Grant, Ill., from Fort Oglethorpe, Lieuts. W. H. KOHLER, Milroy; C. A. YOCOM, Reading; G. M. B. BRADSHAW, Sugar Grove. Evacuation hospital, from Fort Bayard, Capt. S. J. REPPLIER, Philadelphia.

To Camp Greene, N. C., base hospital, from Camp Jackson, Lieut. F. J. CONAHON, Morea; from Camp McClellan, Lieut. P. S. STOUT, Philadelphia; from Camp Wadsworth, Major S. C. BURNS, Philadelphia.

To Camp Jackson, S. C., base hospital, Capt. T. C. DAVIS, Philadelphia.

To Camp Joseph E. Johnston, Fla., from Fort Oglethorpe, Capt. A. F. B. MORRIS, Pittsburgh.

To Camp Lee, Va., from Fort Oglethorpe, Lieut. C. E. LERCH, Wyomissing.

To Camp Sevier, S. C., from Fort Oglethorpe, Lieut. E. B. COOPER, Sunbury. As tuberculosis examiner, from New Haven, Lieut. I. Z. STALBERG, Philadelphia.

To Camp Sherman, Ohio, base hospital, from Camp Beauregard, Lieut. A. B. SMITH, Wyoming. As assistant to camp surgeon, from Camp Meade, Capt. C. JACOBOSKY, Wilkes-Barre.

To Camp Upton, N. Y., base hospital, from Camp Dix, Capt. L. D. SARGENT, [illegible] Walter Reed General Hospital, Lieut. D. M. [illegible]

To C[illegible] J. HAWKINS, Millsboro.

To Fort Hamilton, N. Y., from Camp Laurel, Lieut. B. H. HOKE, Coalport.

To Fort Oglethorpe evacuation hospital, from Camp Beauregard, Lieut. C. A. PAULUS, Telford; from Camp Wadsworth, Lieut. M. FRISHMAN, Pittsburgh. For instruction, Capt. P. R. CORRELL, Easton; Lieuts. A. B. BRUNER, Columbia; C. A. McNEILL, Erie; J. A. GORMLY, Meadow Lands; R. S. CLARK, J. S. LOGAN, L. W. MILFORD, Pittsburgh; W. R. LOVERING, Stroudsburg; W. C. BYERS, Webster; *from* Pittsburgh, Lieut. J. S. LOGAN, Pittsburgh.

To Lakewood, N. J., for instruction, Lieut. J. G. FLYNN, Ridgway.

To Philadelphia, Pa., to take charge of university instruction in orthopedic surgery, from Washington, Lieut.-Col. J. T. RUGH, Philadelphia.

To report to the commanding general, Panama Canal Department, from Fort Oglethorpe, Lieut. C. RODRIGUEZ, Easton.

Porto Rico

To Camp Las Casas, P. R., Lieut. P. A. RIVERA, Guaynabo.

To Washington, D. C., for instruction, from Camp Las Casas, Lieut. C. S. MOSS, Ponce.

South Carolina

To Camp Grant, Ill., from Fort Oglethorpe, Capt. G. W. POOVEY, Lancaster.

To Camp Jackson, S. C., base hospital, from Panama Department, Capt. M. C. PALMER, Tyron.

To Camp Joseph E. Johnston, Fla., from Fort Oglethorpe, Capt. C. C. GAMBRILL, Abbeville.

To Camp Lee, Va., Capt. H. H. WYMAN, Jr., Aiken.

To New Haven, Conn., Yale Army Laboratory School, for instruction, Lieut. J. A. HAYNE, Columbia.

Honorably discharged on account of physical disability existing prior to entrance into the service, Lieut. J. W. PARKER, Greenville.

South Dakota

To Camp Crane, Pa., from Camp Grant, Lieut. T. J. DEVEREAU, Aberdeen.

To Camp Custer, Mich., base hospital, from Camp Grant, Lieut. S. A. DONAHOE, Sioux Falls.

To Camp Dodge, Iowa, base hospital, for instruction, Capt. J. F. GARRISON, Oldham.

To Camp Grant, Ill., from Fort Oglethorpe, Capt. W. F. KELLER, Sioux Falls.

To Camp Joseph E. Johnston, Fla., base hospital, from Fort Oglethorpe, Lieut. L. J. BROOKMAN, Vermilion.

To Fort Benjamin Harrison, base hospital, from Camp Dodge, Capt. E. M. STANSBURY, Vermilion; Lieut. L. HARE, Spearfish.

To Fort Riley for instruction, Lieut. N. J. NESSA, Sioux Falls.

To Fort Snelling, Minn., base hospital, from Camp Dodge, Lieut. H. L. CRANE, Lead.

Tennessee

To Camp Crane, Pa., from Camp Meade, Lieut. H. E. THOMAS, Memphis.

To Camp Hancock, Ga., base hospital, from Camp Gordon, Capt. J. A. PRICE, Jasper.

To Fort Oglethorpe for instruction, Lieut W. STEELE, Chattanooga.

To New Haven, Conn., Yale Army Laboratory School, for instruction in bacteriology, from Fort Monroe, Lieut. J. H. LITTERER, Nashville.

To Newport News, Va., Lieut. C. H. CARMICHAEL, Knoxville; from Camp Dodge, Lieut. E. C. MATTHEWS, Trenton.

To Rochester, Minn., Mayo Clinic, for instruction, and on completion *to Camp Custer, Mich.*, base hospital, for instruction, Lieut. C. R. CRUTCHFIELD, Nashville.

Texas

To Astoria, N. Y., from Fort Oglethorpe, Capt. C. P. COOK, Ennis.

To Auburn, Ala., Alabama Polytechnic Institute, from Camp Logan, Major G. A. McBRIDE, Harlingen.

To Camp Cody, N. M., as tuberculosis examiner, from Fort Logan, Lieut. W. E. CAMPBELL, Cedar Creek.

To Camp Crane, Pa., from Army Medical School, Lieut. E. ACKER, Pasadena.

To Camp Greene, N. C., base hospital, from Camp Beauregard, Capt. R. T. MORRIS, Houston; Lieut. T. N. JARMON, Terrell.

To Camp Logan, Texas, from Fort Riley, Capt. C. P. JONES, Bay City.

To Camp Shelby, Miss., base hospital, Lieut. J. V. HOPKINS, Victoria.

To Camp Travis, Texas, base hospital, Capt. H. G. WALCOTT, Dallas.

To Denver, Colo., from New Haven, Capt. J. T. BERNARD, Dallas; Lieut. C. R. GOWEN, Carlsbad.

To Fort Benjamin Harrison, base hospital, from Camp Bowie, Capt. T. T. JACKSON, San Antonio.

To Fort Oglethorpe for instruction, Lieut. D. M. STONE, San Antonio.

To Fort Riley, from Camp Bowie, Lieut. A. E. WHITE, Houston.

To Leon Springs, Texas, from Fort Riley, Lieut. P. C. PLUENNEKE, Cranfills Gap.

To Newport News, Va., from Camp Dodge, Lieut. E. C. SCHULZE, Shiner.

Honorably discharged, Lieut. H. BRADBROOK, Cat Springs. On account of physial disability existing prior to entrance into the service, Capt. N. T. MOORE, El Paso.

The following order has been revoked: *To Hoboken, N. J.*, from Camp Dix, Lieut. H. L. BROWN, Sherman.

Utah

To Washington, D. C., Surgeon-General's Office, from Fort Douglas, Lieut.-Col. E. G. NORTHINGTON.

Vermont

To Camp Sherman, Ohio, base hospital, from Lakewood, Lieut. R. E. AVERY, Burlington.

Virginia

To Camp Travis, Texas, as camp surgeon, from Camp MacArthur, Capt. F. L. FLANAGAN, Richmond.

[illegible] from Camp Abraham Eustis, Lieut.-Col. D. W. [illegible]

To Roland Park, Md., from Camp Jackson, Capt. N. ARDAN, Bristol.

Washington

To Camp Kearney, Calif., from Fort Riley, Capts. C. S. HOOD, Ferndale; C. E. KEELER, Yakima.

To Fort Snelling, Minn., base hospital, from San Francisco, Lieut. S. E. ROSENTHAL, Spokane.

To Jefferson Barracks, Mo., from Newport News, Capt. K. WINSLOW, Seattle.

West Virginia

To Camp Crane, Pa., from Camp Meade, Capt. G. YOST, Huntington.

Wisconsin

To Camp Crane, Pa., from Camp Grant, Capt. H. M. KAY, Madison; Lieut. J. T. KLEIN, Columbus; from Camp Meade, Lieut. A. A. CHARBONNEAU, Green Bay.

To Camp Custer, Mich., base hospital, from Camp Grant, Lieut. W. F. GROTJAN, Milwaukee.

To Camp Grant, Ill., from Fort Oglethorpe, Lieut. L. E. YOUMANS, Mukwonago.

To Camp Lee, Va., from Fort Oglethorpe, Capt. W. D. HARVIE, Oshkosh.

To Camp Logan, Texas, from Fort Riley, Lieuts. J. M. BAASEN, Mount Calvary; E. L. SCHROEDER, Shawano.

To Denver, Colo., from New Haven, Lieut. L. F. RUSCHHAUPT, Milwaukee.

To Fort Benjamin Harrison, base hospital, from Camp Travis, Lieut. F. J. KORTHALS, Milwaukee.

To Fort Riley for instruction, Lieut. P. G. McCABE, Dotyville.

Wyoming

To Raleigh, N. C., as camp surgeon, from Western Department, Lieut. F. H. SPARRENBERGER, Fort Yellowstone.

Medical News

(Physicians will confer a favor by sending for this department items of news of more or less general interest; such as relate to society activities, new hospitals, education, public health, etc.)

ARKANSAS

District Meeting.—The Tenth District Medical Association met at Fort Smith, September 17. In addition to the regular program a surgical clinic was conducted by Dr. Harry C. King at the Sparks Memorial Hospital.

CALIFORNIA

Hygiene Bureau Established.—The state board of health has created a bureau of child hygiene to study the child health of the state, to cooperate with existing agencies now devoted to that cause. Miss Amy D. Steinhard has been placed in charge of the bureau.

New Laboratory Established.—A building for a research laboratory and clinic is to be erected at the Cottage Hospital, Santa Barbara, similar in its exterior architecture to the other buildings. It will be known as the Memorial Laboratory and Clinic for the Study and Treatment of Nephritis, Shock, and Diabetes, and will be under the care of Dr. Nathaniel Bowditch Potter. It is expected that the building will be ready for occupancy early next year.

Personal.—Dr. J. Perry Lewis, San Diego, who has been ill in the Agnes Hospital on account of septicemia, is reported to be improved.——Dr. William W. Crawford, formerly health officer of San Diego, has been appointed a member of the state board of health.——Capt. Theophilus C. Robinson, Los Angeles, who recently entered the Medical Reserve Corps, was operated on at Fort Riley, Kan., September 6, for the removal of a tumor of the bladder, and is reported to be making satisfactory progress toward recovery.——Dr. Reginald S. E. Murray, San Jose, has been gazetted captain in the Canadian Expeditionary Forces.

ILLINOIS

College Suspended.—Reports state that the Hahnemann Medical College and Hospital of Chicago has suspended for the duration of the war.

Red Cross Commission to Greece.—Drs. Samuel J. Walker, Chicago, and Charles B. Gibson, Chicago, are members of the Red Cross Commission that has started for Greece.

State Conference of Charities.—The Department of Public Welfare announces that the State Conference of Charities and Correction will be held at Decatur, October 25 and 27; that the Charity Organization Federation and State Probation Officers' Association will meet, October 24, and that the State Association of County Home Superintendents will hold its annual meeting, October 24 to 26.

Personal.—Major Milton Mandel, M. C., U. S. Army, has been relieved from duty with Base Hospital No. 12, and has been appointed senior division consultant in general medicine to the Second Army Corps.——Dr. Jonathan L. Wiggins, East St. Louis, has been appointed by the director of the Registration and Education of the State of Illinois a member of the examining committee of medicine in place of Dr. Carl E. Black, Jacksonville, who has resigned to go abroad with the Red Cross commission to Greece.

Licenses Revoked.—An official notice from the Department of Registration and Education of Illinois states that, September 24, the license of Dr. Charles E. Cessna, Oak Park, was revoked because of his connection with an alleged quack concern—the J. Russell Price Company of 9 South Clinton Street, Chicago. At the same time the department revoked the license of Dr. Edward D. Porter of Indianapolis, Ind., for having loaned his Illinois certificate for a specified sum to Mr. Emil Pelisher for use in an office in Joliet. It appears that Mr. Pelisher had been conducting a chain of doctors' offices. The license of Dr. George W. Farver of Hammond, Ind., was revoked recently for a similar offense.

INDIANA

Addition to Tuberculosis Camp.—Former Mayor Boehne has given to the Vanderberg County Antituberculosis Society an additional building for the Boehne Camp which will accommodate forty patients and in case of emergency sixty patients. The estimated value of the camp is now $52,000. With the completion of the new building the camp will be able to care for 110 patients. The new hospital is 151½ feet long, 28½ feet wide and will contain besides the schoolroom and wards, dressing rooms, toilet rooms and other facilities.

Child Welfare Work.—Under the auspices of the Child Welfare Committee, Marion County Council of Defense, consisting of Drs. Jane M. Ketcham, chairman, Edgar F. Kiser, Walter D. Hoskins, Charles O. McCormick and J. Don Miller, all of Indianapolis, there were held during 1918 in Marion County 212 clinics for children, at which 5,304 children were examined and 17,000 children enrolled. Of those examined there were 3,058 children of normal weight, 3,859 children of normal height and 2,858 with no defect. Ninety-seven physicians volunteered services for this work. Follow-up work is to be done and four additional weekly clinics are to be held for children of from 2 to 6 years of age. A report of all defective children has been put into the hands of the Public Health Nursing Association and all such children are to be visited at regular intervals.

New State Officers.—At the annual meeting of the Indiana State Medical Association held in Indianapolis, September 25 to 27, under the presidency of Dr. J. Rilus Eastman, Indianapolis, the following officers were elected: president, Dr. William H. Stemm, North Vernon; vice presidents, Drs. Lindsay C. Whiteside, Franklin, Stephen B. Sims, Frankfort, and Henry B. Hill, Logansport; secretary-treasurer, Dr. Charles N. Combs, Terre Haute (reelected); delegate to the American Medical Association, Dr. J. Rilus Eastman, Indianapolis; alternate, Dr. Miles F. Porter, Ft. Wayne, and councilors, first district, Dr. James Y. Welborn, Evansville, third district, Dr. Walter J. Leach, New Albany, fourth district, Dr. August G. Osterman, Seymour, fifth district, Dr. Spencer M. Rice, Terre Haute, ninth district, Dr. William R. Moffitt, West Lafayette, and twelfth district, Dr. Elmer E. Morgan, Ft. Wayne. Indianapolis was chosen as the next place of meeting.

LOUISIANA

State Clinics.—Arrangements are being made for the establishment of municipal, parish, and state clinics for the treatment of communicable diseases in Shreveport and other principal cities of the state.

New Home for Sanatorium.—Plans for a new building for The Pines, the Shreveport sanatorium of the antituberculosis league, have been completed and ground will be broken this month. The building will be located on a site of 54 acres, 8 miles from Shreveport.

MARYLAND

Epidemic of Influenza Under Control.—Although the number of cases of influenza in the military camps around Baltimore is increasing, it is increasing very slowly and the medical authorities, both of the government service and the state and city, are of the opinion that they have the situation under control and that there is no great danger of an epidemic in the city. Two hundred cases have developed at Camp Holabird, at the Curtis Bay ordnance depot and at the Quartermaster's station at Riverview, and there are about 300 cases at U. S. Army General Hospital No. 2 at Fort McHenry, to which cases from these stations are immediately sent. There are also 1,900 cases at Camp Meade, although there have been but two deaths in all that number of cases, and an outbreak has been reported at Edgewood to the city health authorities, involving 1,100 soldiers and forty civilian employees. Notwithstanding the large number of cases, Dr. C. Hampson Jones, chief of the bureau of communicable diseases of the state board of health, stated that he did not consider the situation alarming. At this time the influenza does not appear to have spread generally throughout the state. Most of the reports received by the department of health have come from military camps, from Baltimore and Annapolis. There are about 500 cases in Annapolis.

MASSACHUSETTS

District Society Meeting.—The quarterly meeting of the Essex North District Medical Society was held at Amesbury Club, September 25. Lieut.-Col. Fred B. Lund, M. C., U. S. Army, Boston, read a paper on "The Present Needs of Our Country for Physicians," and Lieut.-Col. Channing Frothingham, Boston, M. C., U. S. Army, commanding the base hospital at Camp Devens, read a paper on "The Clinic Advantages of an Army Officer."

Personal—Dr. Llewellyn H. Rockwell, Boston, has been appointed resident physician at Long Island Hospital, succeeding Dr. Arthur L. Kinne.——Dr. John F. O'Brien, Taunton, has been appointed a trustee of the consumptives' hospital.——Dr. George McL. Waldie, for many years assistant physician at the State Infirmary, Tewkesbury, Mass., and later connected with the New Bedford Tuberculosis Sanatorium, has been appointed superintendent of the Fair Oaks Lodge Sanatorium, Wadena, Minn., and medical director of Sand Beach Sanatorium.——Dr. Arthur T. Schoomaker is under treatment in the Noble Hospital, Westfield, on account of tumors of the neck, and Dr. George V. Wager, Russell, is ill with pneumonia in the same institution.——Dr. Charles H. Winn, Roxbury, Boston, was appointed high medical examiner of the Massachusetts Catholic Order of Foresters, September 14, succeeding Dr. Francis J. Hanley, Whitman, resigned to acept a commission in the United States Service.——Dr. Arthur V. Pierce, New Bedford, has been commissioned First Lieutenant, M. C., Massachusetts State Guard, and has been assigned to the Seventh Infantry, succeeding Capt. Holder C. Kirby, New Bedford, resigned.

NEW YORK

Personal.—Dr. and Mrs. James H. Jackson, Danville, celebrated the fifty-fourth anniversary of their wedding, September 13.——Dr. Arthur D. Jaques, Lynbrook, has been appointed sanitary supervisor in Long Island, succeeding Dr. Overton.——Dr. Mary Walker, Bunker Hill, who has been seriously ill at the General Hospital, Fort Ontario, is convalescent.

Nurses Wanted.—The Womens' Chapter of the Division of the State Defense Council is cooperating with the State Hospital Commission in its effort to secure 1,000 nurses for the Hospital for the Dependent and Insane. The State Hospital Commission has a three-year course which leads to the registered nurse certificate, and a two-year course, candidates for which need only a grammar school education.

Health Commissioner Condemns Garbage Plant.—After a long and bitter fight waged for several years by the residents of Staten Island to force the Metropolitan By-Products Company to change its methods of handling garbage inasmuch as they constituted a public nuisance, Commissioner Copeland has given the company five days in which to abate the nuisance and unless it complies with this order or appeals to the health department for a modification of this ruling, the street cleaning department will be notified that no more garbage is to be taken to the plant for reduction. This plant has been the source of a very large part of the country's glycerin supply and it is probable that some less objectionable method of garbage reduction will be devised that will permit the company to continue to operate.

New York City

Personal.—Dr. Frank J. Monaghan, Brooklyn, has been appointed deputy commissioner and sanitary superintendent of the department of health, succeeding Dr. B. Franklin Knause, Brooklyn, resigned to accept a commission in the Army.

Work of Eye Clinics Curtailed.—The department of health is about to curtail its clinical work on the eyes of children to the extent of suspending the fitting of glasses. This step has been taken as a war measure and a policy to be pursued only for the period of the war. Clinics where the fitting of glasses has been the exclusive work in the past will be closed, but other eye clinics where diseases of the eye are treated will be continued.

The Influenza Epidemic.—The number of cases of influenza reported to the health department has increased day by day during the week of September 23. The largest number of cases thus far reported for one day was 324 new cases, September 27, this being double the number reported for the previous day. Although the health commissioner, Dr. Royal S. Copeland, asked the board of estimate for only $5,000 with which to combat the influenza epidemic, he was granted an appropriation of $25,000.

Borough Autonomy.—In October a radical change came in force in the administration of the health department. Health Commissioner Copeland has authorized the chief health officer in each borough to assume full responsibility and these officers will be known as assistant sanitary superintendents. This change is made in conformity with the charter requirements. The purpose is not to afford power in the part of the assistant sanitary superintendent, but to make clear the question of disciplinary authority.

OHIO

Convicted of Illegal Drug Sale.—Dr. Thomas E. Burgess, Toledo, is said to have been found guilty of the illegal sale of morphin by a jury in the probate court, September 13.

Reporting Venereal Disease.—According to a bulletin of the state department of health, Akron reports nearly 500 of the 2,000 cases of venereal disease reported to the registrar during August. This city has made the most complete report of any. It is believed that these diseases are not more prevalent in Akron than in Toledo, Cleveland and Cincinnati, larger cities, from which reports are very incomplete.

Physical Training Among Schoolchildren.—The *Ohio Public Health Journal* declares that 75 per cent. of the schoolchildren of Ohio have remediable physical defects. Only the larger cities of the state have such medical supervision in the schools as would improve the condition of most of these children. As shown by the Health and Old Age Insurance Commission of the state, there are 60,000 children in the rural schools who have very little physical supervision. About half of those in the city schools have some degree of supervision.

Personal.—Dr. Harley E. Ward and Cephas C. Greiner, both of Pemberville, sustained severe injuries by the overturning of their automobile while making a professional call near Pemberville, September 14.——An effort is being made to induce Dr. Augustus Ravogli to assume the professorship of dermatology in the medical department of the University of Cincinnati.——Dr. Frank H. Lamb, Cincinnati, who went to France last April under the auspices of the Child Welfare Bureau of the American Red Cross, will soon return to America to enter the Medical Reserve Corps.——Dr. William H. Peters has been appointed acting health officer of Cincinnati, pending the election of a successor to the late Dr. John H. Landis.

PENNSYLVANIA

Personal.—Dr. David Nathan, Norristown, has been commissioned a captain in the Canadian Army Medical Corps.——Dr. Edward H. Harris, Snow Shoe, is in the Bellefonte Hospital on account of chest injuries received in a recent automobile collision.

New State Dispensaries Open.—Five additional state dispensaries have been opened at York, Lancaster, Williamsport, Wilkes-Barre and Altoona, for the treatment of venereal diseases. The dispensaries are in connection with the state tuberculosis service, and the clinics are held in the same buildings.

Officers Elected.—At a recent meeting of the Union County Medical Society the following officers were elected: president, Dr. Harry R. Thornton, Lewisburg; vice president, Dr. Thomas C. Thornton, Lewisburg, and secretary-treasurer, Dr. Amos V. Persing, Allenwood.——At a recent meeting of the Lehigh Valley Medical Association the following officers were elected: president, Dr. Noah W. Reichard, Bangor; vice president, Dr. Frederick A. Fetherolf, Allentown; secretary, Dr. Alexander Armstrong, White Haven, and assistant secretary, Dr. Roger P. Batchelor, Palmerton.

State Medical Meeting.—The sixty-eighth annual session of the Medical Society of the State of Pennsylvania held in Philadelphia, September 23 to 27, had a smaller attendance than usual owing to the fact that many of its members are in the United States service. The officers elected for the ensuing year are as follows: president, Dr. Cyrus Lee Stevens, Athens; vice presidents, Dr. William Duffield Robinson, Philadelphia; Dr. John N. Sproul, Claysville; Dr. Julius H. Comroe, York, and Dr. Wesley Kunkle, Williamsport; secretary, Dr. Walter F. Donaldson, Pittsburgh; assistant secretary, Dr. Christian B. Longenecker, Philadelphia, and treasurer, Dr. George W. Wagoner, Johnstown. Harrisburg was chosen as the next place of meeting. Dr. Cyrus L. Stevens, the president-elect, has served the association for twenty-three years as its secretary and was voted a purse of $2,000.

Philadelphia

Personal.—Dr. Caroline M. Purnell has sailed for France as head of the second unit of the American Women's Hospitals.——Dr. Solomon Marks has been appointed assistant school medical inspector, health department, at a salary of $600.——Dr. Joseph M. Asher has been elected instructor in surgery at the Temple University.

Influenza Increases.—Two hundred new cases of "Spanish" influenza were reported to the bureau of health within twenty-four hours ending September 27. The records of the health department show that 123 of this number are civilians. The remaining seventy-seven are in the Fourth Naval District. Of the civilian cases, sixty-eight are in South Philadelphia, forty-six in North Philadelphia and nine in West Philadelphia.

VIRGINIA

Personal.—Drs. Frank G. Wilson, Norfolk, and James W. Reed, Ocean View, whose terms expired last month, have been requested by Dr. Ennion G. Williams, Richmond, secretary of the state board of health, to remain in office for the time being.——Dr. Roy K. Flannagan, chief of the Richmond Health Department, has declined the position of health officer of Hopewell.

Public Health Campaign.—An intensive health campaign was carried on in Gloucester County, September 20 to 28, under the auspices of the Virginia Anti-Tuberculosis Association and the state board of health. During the week leaders of the Virginia Anti-Tuberculosis Association will visit all the public schools in the county, and stimulate the interest of the public in behalf of the public health organizations.

New Clinics.—Dr. Powhatan S. Schenck, health commissioner of Norfolk, has requested that the venereal clinic conducted by the City Health Commission in conjunction with the federal authorities be provided with more adequate quarters.——The clinic for the treatment of the eye, ear, nose and throat was opened at Norfolk last month in charge of Dr. B. D. Downing. The hours for the clinic are from one to two o'clock, on Tuesday and Thursday afternoons.

Diploma and License Stolen.—Secretaries of state licensing boards and others interested, are requested to be on the lookout for a diploma from the Kentucky School of Medicine, Louisville, issued June 12, 1907, and a certificate from the Virginia State Board of Medical Examiners issued in June, 1915, both of which bore the name of Samuel L. Stallard. It appears that these papers were stolen while Dr. Samuel L. Stallard, Newport News, was on the train recently.

WEST VIRGINIA

In Memory of Dr. Megrail.—A special meeting of the Ohio county Medical Society was held in Wheeling, September 14, to adopt suitable resolutions of respect for the late Dr. William P. Megrail.

Personal.—Dr. Floyd F. Farnsworth, Frenchton, has resigned as a member of the state public health council and Dr. Herbert E. Sloan, Clarksburg, has been made his successor.——Dr. Vincent T. Churchman, Charleston, has been elected to succeed Dr. Farnsworth as president of the council. ——Dr. Walter Van Ness, in charge of the tuberculosis eradication department of the Bureau of Animal Industry, Washington, D. C., has located at Clarksburg, and will direct the work there.

Venereal Disease Campaign.—A bureau of venereal diseases has been established in the state in connection with the Public Health Council, and Dr. Floyd F. Farnsworth, Charleston, has been appointed acting assistant surgeon, U. S. P. H. S., and placed in charge of this bureau. The regulations of the Public Health Council include a declaration that venereal diseases are dangerous to the public health, the reporting of venereal diseases, instruction of patients, investigation of cases, protection of others from infection by venereally diseased persons, the prohibition of prescribing for venereal disease by druggists, the giving of certificates of freedom from venereal disease is prohibited, and it is declared that all records concerning persons infected with venereal disease should be inaccessible to the public except in so far as publicity may attend the performance of the duties in accordance with the regulations and laws of the state.

CANADA

Most Ontario Doctors Observe Temperance Act.—According to the returns for the mouth of August, about 10 per cent. of the doctors of Ontario are issuing most of the prescriptions for liquor in that province. One doctor in Hamilton is said to have issued 725 in the month. Six issued an average of 456. Ninety per cent. of the doctors of the province issued an average of 5.6.

Personal.—Dr. Frederick N. G. Starr, Toronto, has been appointed consulting surgeon with the British forces in France, and has reached there in safety.——Col. Murray MacLaren, C.M.G., St. John, N. B., who has been overseas some years, has been appointed commanding officer of Granville Hospital, Buxton, England.——Lieut. Henry C. Pearson, Toronto, has returned on three months' leave. He enlisted the first month of the war and has been serving in France for the past three years.——Lieut.-Col. Charles S. McVicar, Toronto, was recently recalled for duty in Canada and has arrived home. He was one of the six members of the University of Toronto Base Hospital mentioned in dispatches when it was at Saloniki.——The following lieutenants in the medical service will go from the Third Military District, Kingston, Ont., with the Siberian contingent: Hendry Connell, J. H. Munroe, J. A. Lalonde, S. J. R. Horne, J. Sharp and F. S. Tisborne.

GENERAL

Prevention of Infant Mortality.—The ninth annual meeting of the American Association for the Study and Prevention of Infant Mortality will be held at Asheville, N. C., November 12 to 14. The program pays especial attention to war subjects.

Industrial Medicine.—At the meeting of the Seventh Annual Safety Congress in St. Louis, September 20, Dr. Clarence D. Selby, U. S. P. H. S., discussed industrial medicine as an increased production in war times, and urged increasing cooperation by employers, employees, medical schools, and the medical profession generally.

Railroad Relief Committee Appointed.—Director-General McAdoo has announced the appointment of the following committee on health and medical relief for the railroad administration: Dr. J. E. Dunott, chairman, and Drs. George W. Cale, Jr., St. Louis; Victor G. Heiser, New York City; Thomas R. Crowder, Chicago, and Henry M. Bracken, St. Paul. The committee is charged with recommending all necessary measures to protect the health of employees of the railroads under federal control, based on a survey of conditions.

Leprosy Expert Dies.—Moses Tran Clegg, superintendent of the Queen's Hospital, Honolulu, noted as a bacteriologist and especially for his research work in leprosy, died in Honolulu, August 14. Mr. Clegg was the assistant director of the Bureau of Sciences of the Philippines in 1908, and a year later succeeded in isolating and propagating the leprosy bacillus. He also spent considerable time in work on bubonic plague in San Francisco and New Orleans, and served for eighteen months as laboratory director in the port of New York in the United States Public Health Service.

Influenza.—Influenza, up to September 26, had been reported to the Public Health Service in twenty-six states. It continues to spread rapidly and probably cases will be found in all of the states. September 25, there were 5,000 new cases reported in the Army camps, with 155 deaths. The total cases in the camps to that date were about 30,000. It is believed, however, that as far as the Army camps are concerned, the situation is under control, and in some camps the disease is distinctly on the wane. At the Great Lakes station, near Chicago, among the 45,000 men in camp there had been about 500 deaths from influenza and pneumonia since the beginning of the epidemic, September 9. The disease first appeared in Illinois at Great Lakes, September 9, and since that date there had been about 9,000 cases in the camp.

The Chemical Convention.—The National Exposition of Chemical Industries, held in New York City during the week of September 23, was the most successful ever held in this country, owing to the many developments and advances in chemical science during the war period. One of the most interesting addresses from the medical standpoint was that of Dr. Charles H. Herty in which he suggested a plan for the establishment of a national research laboratory for chemists similar to that of the Rockefeller Institute for Medical Research and providing facilities for experimental work in the chemistry of medicine. This suggestion proposes an institution in which adequate provision would be made for laboratory tests of all kinds, and through which cooperation should be established with the organic laboratories of universities and with the hospitals of the country.

FOREIGN

The Golgi Scholarship.—In honor of Professor Golgi, senator, who retires this year from the chair of pathology and histology at the University of Pavia, it is proposed to found a scholarship in the medical department for the orphan of some physician, preferably one whose father was lost during the present war. Contributions may be sent to the treasurer, Tesoriere dell' Ordine dei Medici della Provincia di Pavia.

Welfare Work for the Young.—An exchange quotes the *Münchener medizinische Wochenschrift* to the effect that the Prussian authorities have decreed that every city and rural district is to organize an official board for welfare work for the young. The board is to comprise the governor or mayor, the district physician, some members of the clergy, and twelve experienced men and women, including some medical men or women. They are to have oversight of orphans, illegitimate children, the aid for indigent minors, etc.

Medical School for French West Africa.—According to a report of U. S. Consul W. J. Yerby at Dakar, Senegal, the French government has authorized the establishment of a medical school at Dakar, which was to be opened, Oct. 1, 1918. The school will be under the direct authority of the governor general of French West Africa and under the technical control of the inspector-general of the health medical services of that colony. The object in establishing the school is to supply the needs of the country, especially on account of the war, as thousands will return from the battlefields wounded and in bad health, requiring special medical treatment.

Influenza in Europe.—The epidemic of "Spanish influenza" seems to have been mild in Italy. The cases among the troops on active service have been few and mild. In Switzerland the disease was unusually severe and pneumonia was frequent. Several deaths among physicians were mentioned. One Swiss physician states that in his fifty-three fatal cases, forty-one of the patients were between 15 and 30 and nearly all absolutely healthy young people. This same prevalence of the severer cases among the young is mentioned in the reports from Germany cited in the *Hospitalstidende* of Copenhagen. The fatality is said to be highest between 20 and 40. Besides pneumonia and empyema, serous meningitis, sinusitis and otitis media were observed, but infants seemed to escape entirely. This was noticed also in Spain, infants showing no trace of the disease when both parents and the nurse had it. Even Pfeiffer, the discoverer of the influenza bacillus, was not certain whether the bacteriologic findings were positive for this bacillus, and others in Germany, Sweden and Norway were also dubious about their findings. Lubarsch found pseudomembranes in the throat in some cases. In the Netherlands, in a certain proportion of the cases, diarrhea and abdominal pains were the predominant symptoms. A writer in the *Nederlandsch Tijdschrift* remarks that after this no one can refer to influenza as a "harmless disease." The cry comes also from Portugal that "grippe kills with its pneumonia."

SOUTH AND CENTRAL AMERICA, MEXICO AND WEST INDIES

Brazilian Medical Mission in France.—An exchange states that the Brazilian minister announces that Brazil is sending a medical mission to France. The party is to consist of fifty doctors besides a number of students. They are to be attached to the Brazilian Hospital already installed near the front.

Home for Medical Society at Rio de Janeiro.—With appropriate ceremony the cornerstone was laid recently for the building destined to be the home of the Sociedad de Medicina e Cirurgia of Rio de Janeiro. The president of the society, Dr. O. de Oliveira, is said to have been chiefly responsible for this realization of the long cherished dream of the members. The society was founded thirty-three years ago, and it has its own museum and library. The funds for the construction of the building, it is said, have all been subscribed, the national authorities having presented the society with the site, and the municipality having appropriated 6 *contos* for the purpose. The society and its friends in medical and pharmacist circles have raised the balance needed.

CORRECTION

Director Base Hospital No. 53.—The adjutant of Base Hospital No. 53 in France informs us that Lieut.-Col. Daniel A. Sinclair, M. C., U. S. Army, assumed command of this hospital at Camp Hancock, Ga., on May, 1918, and has been in command continuously since that date. The item in The Journal of July 20, 1918, stating that Lieut.-Col. Albert E. Halstead, M. C., U. S. Army, had been placed in charge of this hospital is incorrect.

PARIS LETTER

Paris, Sept. 5, 1918.

The American Crusade Against Tuberculosis

In a previous letter (The Journal, June 8, 1918, p. 1784), mention was made of the crusade begun in France against tuberculosis by the Rockefeller Foundation under the direction of Dr. Livingston Farrand, president of the University of Colorado. Work was begun in one of the densely populated arrondissements or districts of Paris, the nineteenth, and in the département d'Eure-et-Loir. A dispensary system was established, with visiting nurses, and an ingenious method of popular education was inaugurated by means of demonstrative conferences, striking posters, and amusing as well as persuasive pamphlets. The département d'Eure-et-Loir has been traversed effectively during the past two or three months by a dispensary autotruck, provided with everything needed to teach the public and to carry conviction to them (cinematography, etc.). The same outfit has also been taken through the départements of Loir-et-Cher, Indre-et-Loir, and Cher, and is at present covering the département de l'Allier. Another outfit after being taken through the départements d'Ille-et-Vilaine and du Finistère, is now covering the département des Côtes-du-Nord. These educational and prophylactic tours have met with great success, more than half of the population having participated in the conferences.

Physics, Chemistry and Biology as Required Premedical Studies

In France, before entering on medical studies proper, one year is spent in the Facultés des sciences in the study of physics, chemistry and natural sciences—called familiarly the P. C. N. The value of this premedical work as now organized is questionable. These courses are not intended for future medical students alone; hence it is not right to impose this premedical requirement on them. Without a doubt these subjects are indispensable to physicians, but some people contend that it would be better to revert to the system which was in vogue twenty-five years ago under which one year was devoted to the study of physics, chemistry and biology taught in the medical department by physicians, who emphasized particularly the medical application of these sciences.

A Flying Operating Unit

At a recent meeting of the Académie de médecine, Dr. Walther presented the plans and photographs of a surgical avion designed by M. Nemirowski and Dr. Tilmant as capable of rendering service to the severely wounded on the battlefield itself. This avion, the idea for which was encouraged by the late Professor Pozzi, can transport its load anywhere. It is designed to carry a complete surgical equipment—personnel of three—a complete roentgenographic outfit, sterilized instruments, gowns, dressings, in fact everything needed to perform eight emergency operations. The entire outfit, including an autoclave, a reservoir of sterilized water, accumulators and steam sterilizer, weighs only 360 kilograms and occupies a very limited space. The first avion is ready for service. On the initiative of Dr. Stepinski, director of the Polish Service de Santé, a committee has been formed which will present a group of complete surgical avions of this kind to the French army. It will be known as the "escadrille Pozzi" in honor of the man who encouraged the initiative of its inventors.

Antigas Measures

At a conference held recently at l'Ecole d'application de médecine et de pharmacie militaires du Val-de-Grâce, consideration was given the properties of the gases now used by the enemy, protective measures against these gases, and the best means for disseminating such knowledge to the physicians now in service. This conference was attended by the medical directors of the Services de Santé of the army, the chiefs of the medicolegal and hygienic centers of the zone of the interior, the chiefs of special services, etc.

The American Red Cross at Lyons

M. Edouard Herriot, mayor of Lyons, gave a dinner in honor of the commandant Marshall Hale, appointed director of the southern intermediate zone of the American Red Cross, of which Lyons is headquarters. The notables of the region were present at this dinner, also the United States consul. Marshall Hale stated that it was his intention to make Lyons a center of large activities, aiding in the most extensive way the numerous institutions and agencies now in operation. In the name of Lyons and the region, the mayor expressed his liveliest thanks to the speaker.

The Vacation Colonies

The Oeuvre des *colonies* de vacances was founded in 1882 by Mme. Edmond de Pressensé *for the purpose* of removing poor children from the *pernicious surroundings* of the large ities and giving them an *opportunity to benefit* from the lean, healthy atmosphere of the country, the mountains and he sea, strengthening them physically as well as *morally* (The Journal, Nov. 12, 1910, p. 1745). Since the beginning of the war, 22,000 children of *both* sexes, from 5 to 14 years of age, *orphans*, *children* of refugees or of men in the service, have benefited from this *movement*.

Japanese Red Cross Mission in France

The *Japanese* Red *Cross* has sent a commission to France to study the French Service de Santé and to convey to the French aid societies (*sociétés de secours*) the good wishes of our ally of the extreme Orient. This mission visited the principal formations of the Red Cross societies in Paris and then left for the front.

Red Cross Postage Stamps

According to the terms of an agreement with the "*administration des postes*" (postal authorities) of Belgium, England, Italy and Serbia, it has been decided that the stamps used in France for the benefit of the Red Cross may also be used for postage stamps on *mail whose destination* is the countries mentioned. Likewise, the Red Cross special postal stamps issued in *these* countries *will* be accepted as franking mail destined for France.

The War Blinded

A group of *aveugles de guerre* (war blinded) has issued *a call to all* soldiers who have sustained eye wounds, inviting them, as other classes of the maimed have *done*, to organize *and* found *syndicats professionnels* whose object will be to establish and maintain uniformity and cooperation between all the various agencies looking after the war blind and the schools engaged in their reeducation. Such an organization *would be able to* purchase raw materials at lower *prices, and* would also reduce the selling expense considerably.

Gift of Cuban Physicians to the War Medical Aid Fund

Prof. José A. Presno of Havana, Cuba, has sent to the Association des médecins de France, for its fund for *assistance confraternelle de guerre*, 7,000 francs contributed by physicians of Cuba, with a message stating that they wish to "reaffirm their admiration of the glorious Latin nation and their gratitude to French medical science, the most faithful guide and the best inspiration of all medical culture."

LONDON LETTER

London, *Sept. 3, 1918.*

Medical Students and the War

The effect of the war on the number of medical students has been described from time to time in previous letters. The approaching opening of a new medical session affords the opportunity of reviewing the present position. Before the war, in the years 1910-1914, the average annual entry of first year medical students was about 1,440. During the war the number of entries has been increased to about 2,000. Thus the number of students pursuing their curriculum in the medical schools has steadily increased. In May, 1916, the total was 6,103; in January, 1917, 6,682; in October, 1917, 7,048, and in May, 1918, 7,630. Notwithstanding this increase, the great withdrawal of students from the medical schools for combatant service or for service as surgeon probationer in the navy has resulted in a considerable deficiency in fourth and fifth year students, who can furnish only about three fourths of the yearly entry into the profession considered desirable to make up for the wastage. The numbers of medical students now studying are, for the various years: first year, 1,378; second year, 1,249; third year, *1,050*; fourth *year*, 759; fifth year, 944. In 1920, when the present *fourth year* *students are* due to qualify, the *deficiency of entries* into the profession will be at its *maximum*. *Another effect* of the war is a great increase in the number of women students. Their percentage *of* the total is: first year, 32; second year, 33; *third year, 32*; fourth year, 27; fifth year, 18. Thus, although *the percentage* of women has remained almost constant *during* the four war years, it shows a considerable *increase on* the prewar figure, which corresponds to the fifth year students. The total number of physicians on the register is 43,819, which is thus distributed in the United Kingdom: England, 54 per cent.; Scotland, 32 *per* cent.; Ireland, 14 per cent. Urgent *representations* have been made to the government as to the threatened shortage of physicians due to the withdrawal of students for *combatant* service, a number of third year students have been allowed to return from active service to complete their studies, and students on their way to qualification, *liable to be called* to the colors, are being allowed to complete *their studies*. The minister of national service has undertaken to *provide* that if possible the number of students in *training shall* be *kept* at a level sufficient to give an annual yield of 1,000.

Tetanus Following the Subcutaneous Injection of Gelatin

The subcutaneous *injection* of gelatin is supposed to *increase* the coagulation of the blood and therefore has been used as a hemostatic and also to promote coagulation in aneurysms. For the latter *object* it was introduced in 1898 *by two French* workers, Lancereaux and Paulesco. But gelatin *sometimes* contains the spores of tetanus bacilli, *and* cases of tetanus have followed its subcutaneous *injection*. A case that occurred in a London hospital has just been the subject of a coroner's inquest. A *man*, aged 25, supposed *to be suffering* from typhoid fever, had severe intestinal hemorrhage for which 20 c.c. of gelatin (guaranteed to be sterilized *for subcutaneous use*) was injected into the left thigh. Five days *later* he began *to complain* of inability to open his *mouth properly*, and stiffness and pain in the muscles *of* the back *of the neck and trunk.* A typical attack of tetanus developed and proved *fatal* on the following *day*. The *spasms* notably affected the left thigh. The *necropsy revealed intestinal typhoid* ulcers, *and* a *small* abscess in the thigh, apparently at the site of *the injection*. *From this Dr.* Spilsbury, [illegible] expert, who made the necropsy, obtained [illegible] those of tetanus. A verdict of death by misadventure due to tetanus was returned. Dr. Parkes Weber, under whose care the patient was, suggests the possibility that the bacilli might not have *come from the gelatin but* from an imperfectly sterilized *syringe or by way of the ulcers* from ingested food.

Marriages

Lieut. James Edward McDowell, M. C., U. S. Army, Philadelphia, on duty with the American Expeditionary Forces in France, to Miss Lillian Dauphney of Montreal, in London, June 18.

Lieut. James Eddy Arnold, M. C., U. S. Army, Miles City, Mont., to Miss Laina Louisina Laury of Louisville, Ky., September 7.

Capt. Oliver Linwood Stringfield, Jr., M. C., U. S. Army, Marshall, N. C., to Miss Lois Wood of New Canaan, Conn., August 28.

Lieut. Samuel Wilson McEwan, U. S. N. R. F., Cincinnati, to Miss Ethel Belle Allee, also of Cincinnati, September 11.

Clarence Albert Butler, Dell Rapids, S. D., to Miss Daisy Dean Carr of Marison, S. D., at Soiux Falls, S. D., July 11.

Lieut. Clayton Willard Eley, U. S. Navy, Detroit, to Miss Katie Brinkley of Suffolk, Va., September 11.

Frank Oscar Burk to Mrs. Anne Applegren, both of Davenport, Iowa, at Galesburg, Ill., September 6.

Josiah Shaftesbury Davies, Tacoma, Wash., to Miss Ruth E. Irle, at Jacksonville, Ore., September 11.

Thomas B. Horton, Curtis Bay, Md., to Mrs. Grace H. Norwood of Baltimore, September 21.

Irwin Wilson Voorhees to Miss Hazel Letitia Coleman, both of New York City, September 7.

John Joseph Burke to Miss Catherine F. Lynd, both of Schenectady, N. Y., September 14.

Grace Lynde Meigs, Washington, D. C., to Thomas Crowder, at Keokuk, Iowa, recently.

Walter J. Pellett, Manitowoc, Wis., to Miss Ellen Kikulski of Chicago, August 7.

Julian Herman Lewis to Miss Eva Overton, both of Chicago, September 4.

Eugene C. Hamley to Mrs. Alice Dyer, both of Pasco, Wash., in August.

Fraray Hale, Bridgeport, Conn., to Mrs. Mabel Camp Dorsey, recently.

Deaths

Col. Joseph Basil Girard, M. C., U. S. Army (retired), San Antonio, Texas; University of Michigan, Ann Arbor, 1867; aged 71; a Fellow of the American Medical Association, and a member of the Association of Military Surgeons of the United States; who entered the United States service as assistant surgeon in 1867; major and surgeon in 1888, lieutenant-colonel and deputy surgeon-general in 1901, and colonel and assistant surgeon-general in 1902; retired in 1910, on attaining the age of 64 years; was with General Crook in the Apache Campaign in 1873, and for nine years saw almost continuous service in Indian warfare; died at his home, August 25.

Major Walter Whitney, M. R. C., U. S. Army, Augusta, Ga.; Columbian College, Washington, D. C., 1872; aged 69; at one time a Fellow of the American Medical Association; a member of the Association of Military Surgeon of the United States; acting assistant surgeon, U. S. Army, from 1880 to 1890, and from 1898 to 1901, during which time he served in Indian campaigns in Arizona and New Mexico, and later in the Philippine Islands; prior to his Army service, Indian agency physician from 1875 to 1879, and from 1893 to 1896 an officer of the U. S. P. H. and M.-H. Service; since 1913 on duty at the Augusta Arsenal, Augusta, Ga.; died in that place, September 4, from heart disease.

Charles Barnsdall Parker, Cleveland; University of Wooster, Cleveland, 1877; M.R.C.S. (Eng.), 1880; aged 65; a Fellow of the American Medical Association; one of the founders of the Cleveland General, and St. Luke's hospitals, and visiting surgeon to St. John's Hospital; dean and professor of clinical surgery in Ohio Wesleyan University Medical School, Cleveland, from 1894 to 1898, and thereafter senior professor of clinical surgery in Western Reserve University, Cleveland; local surgeon of the Lake Shore and Michigan Southern Railroad; died at his summer home on Wooster Road, Rocky River, September 18, from heart disease.

Capt. William Burrows Hudson, M. R. C., U. S. Army, Washington, D. C.; George Washington University, Washington, D. C., 1905; aged 40; a Fellow of the American Medical Associaton; formerly major, M. C., N. G. D. C.; who went overseas in the autumn of 1917, in command of an ambulance company of the National Guard of the District of Columbia, incorporated in the Rainbow Division; while caring for the wounded on the western front in France, was instantly killed, August 1, by the explosion of a shell.

Edgar Miller Holmes, Boston; Harvard Medical School, 1895; aged 50; a Fellow of the American Medical Association; associate professor of otology and laryngology in Tuft's College Medical School, Boston; aural surgeon in the Boston City Hospital and Boston Dispensary; consulting aural surgeon to the Massachusetts Infants' Asylum; and ear, nose and throat surgeon at St. Elizabeth's Hospital; was drowned by the overturning of his canoe at Point Allerton, Mass., September 19.

Emerson K. Kellenberger, Yates Center, Kan.; Medical College of Ohio, Cincinnati, 1871; aged 68; a Fellow of the American Medical Association and president of the Woodson County Medical Society in 1914; for twenty years local surgeon of the Missouri Pacific Railway Company; for two years coroner of Franklin County, Kan., and secretary of the first board of medical examiners of his judicial district in Arkansas; died at his home, September 11, from cerebral hemorrhage.

William Pickard Megrail, Wheeling, W. Va.; Western Reserve University, Cleveland, 1888; aged 59; a Fellow of the American Medical Association; a specialist in obstetrics and diseases of children; local surgeon for the Baltimore and Ohio System, and the Wheeling Traction Company; a member for several years and president of the first branch of the Wheeling City Council; died at his home, September 30, from cerebral hemorrhage.

Charles Henry Norred, Minneapolis, Minn.; Jefferson Medical College, 1886; aged 76; a veteran of the Civil War, in which he served as surgeon in the Seventh Illinois Volunteer Cavalry; formerly medical director for the department of Minnesota of the Grand Army of the Republic; surgeon to the Soldiers' Home; died at the Battle Mountain Sanatorium, Hot Springs, S. D., September 16.

Robert Edward McCullough, Flint, Mich.; Starling Medical College, Columbus, Ohio, 1898; aged 50; a Fellow of the American Medical Association; while driving his motor car over a grade crossing over the Corunna Road, near Lansing, Mich., August 28, was struck by a passenger train and received injuries which caused his death a few minutes later.

Robert Jarvis Mitchell, Girard, Ill.; Rush Medical College, 1871; aged 74; a Fellow of the American Medical Association, and a charter member of the Macoupin County Medical Society, of which he was once president; for ten years president of the Girard board of education; died at his home, September 8.

Alfred Mahlon Bigelow, Mansfield, Mass.; Boston University School of Medicine, 1900; aged 55; also a graduate of Harvard Veterinary College; at one time town physician of Mansfield; died in the Massachusetts General Hospital, Boston, from adenocarcinoma of the sigmoid, July 30.

James E. T. Holiman, Little Rock, Ark.; College of Physicians and Surgeons, Little Rock, 1907; aged 51; a member of the Arkansas Medical Society; associate professor of theory and practice of medicine in his alma mater; died at his home, September 17, from cerebral hemorrhage.

John H. Demarest, White Plains, N. Y.; New York Homeopathic Medical College, New York City, 1865; aged 81; for thirty years a member of the staff of the Metropolitan Hospital, Blackwell's Island, and at one time president of the medical board; died at his home, September 14.

Lieut. Gordon Trevor Courtenay, U. S. N., San Diego, Calif.; Northwestern University Medical School, Chicago, 1908; aged 31; a Fellow of the American Medical Association; died in the New York Naval Hospital, September 23, from pneumonia following influenza.

Jacob Samuel Price, Beaumont, Texas; Tulane University, New Orleans, 1891; aged 53; a member of the State Medical Association of Texas; at one time a member of the state board of health; died in the Hotel Dieu, Beaumont, September 12, from heart disease.

Samuel Allan Lacock, Canonsburg, Pa.; Jefferson Medical College, 1877; aged 69; a member of the Medical Society of the State of Pennsylvania; postmaster and once burgess of Canonsburg; died in the West Penn Hospital, Pittsburgh, September 18.

Ralph Emerson Stevens, Marlboro, Mass.; Harvard Medical School, 1897; a member of the Massachusetts Medical Society; aged 48; for fifteen years chairman of the local board of health; died at his home, September 18, from uremia.

Julius Edward Block, Rembrandt, Iowa; Detroit College of Medicine and Surgery, 1904; aged 38; was found dead in his office, September 3. The coroner's verdict was that he died about August 28, from an overdose of intoxicants.

James Wallace Ford, Jr., Mount Carmel, Pa.; Hahnemann Medical College, Philadelphia, 1905; aged 37; a member of the Medical Society of the State of Pennsylvania; died in his office, September 17, from acute dilatation of the heart.

Albert Marvin Hutton, Kalamazoo, Mich.; Detroit Homeopathic Hospital, Detroit, 1905; aged 45; at one time a Fellow of the American Medical Association; died at the Fairmount Hospital, Kalamazoo, August 8, from diabetes.

Ross B. Rowe, Reading, Pa.; University of Pennsylvania, Philadelphia, 1885; aged 57; a member and once vice president of the staff of St. Joseph's Hospital, Reading; died at his home, September 20.

Mott Dwight Cannon, New York and Greenwich, Conn.; New York Homeopathic Medical College, New York City, 1882; aged 59; died suddenly at Poultney, Vt., September 21.

George Volney Bush, Dawson, Ala.; Southern Medical College, Atlanta, Ga., 1890; aged 49; died in Chattanooga, Tenn., August 18, a day after an operation for cholelithiasis.

Charles E. Smith, Colorado Springs, Colo.; Louisville (Ky.) Medical College, 1878; aged 63; also a druggist; died at his home, September 6.

Joseph T. Bright, Covington, Ky.; University of Pennsylvania, Philadelphia, 1866; aged 76; died at his home, September 3.

Francis A. Woodward, Springfield, Tenn.; University of Louisville, Ky., 1882; aged 60; died at his home, September 18.

John Barton Sanders, LaGrange, Ga.; a nongraduate practitioner since 1888; aged 55; died at his home, September 15.

Zachariah C. Myers, York, Pa.; University of Maryland, Baltimore, 1881; aged 59; died at his home, September 9.

The Propaganda for Reform

In This Department Appear Reports of the Council on Pharmacy and Chemistry and of the Association Laboratory, Together with Other Matter Tending to Aid Intelligent Prescribing and to Oppose Medical Fraud on the Public and on the Profession

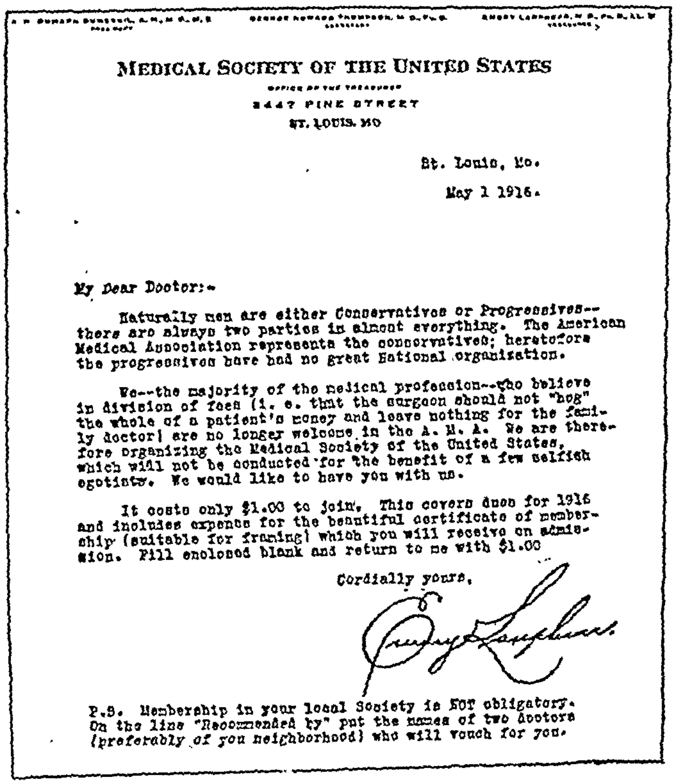
MEDICAL SOCIETY OF THE UNITED STATES

From "Division of Fees" to "Down With Autocracy"

The "Medical Society of the United States" has for its "Honorary President" one A. H. Ohmann-Dumesnil, A.M., M.D., M.E., Sc.D., Ph.D., and for its "Secretary and Treasurer" one Emory Lanphear, M.D., C.M., Ph.D., LL.D. As originally planned, the "society" *seems* to have been based on the idea of organizing the "fee-splitters." In May, 1916, the birth of the organization was announced to the medical profession through a letter signed Emory Lanphear, written on the stationery of the "Medical Society of the United States." Even in its embryonic state the society had A. H. Ohmann-Dumesnil, A.M., M.D., M.E., for its president, and Emory Lanphear, M.D., Ph.D., LL.D., as its treasurer. The letter read in part:

> "We—the majority of the medical profession—who believe in division of fees (i. e., that the surgeon should not 'hog' the whole of a patient's money and leave nothing for the family doctor), are no longer welcome in the A. M. A. We are therefore organizing the Medical Society of the United States, which will not be conducted for the benefit of a few selfish egotists. We would like to have you with us.
>
> "It costs only $1.00 to join. This covers dues for 1916, and includes expense for the beautiful certificate of membership (suitable for framing), which you will receive on admission. Fill enclosed blank and return to me with $1.00."

But presumably the idea of organizing on a basis of "fee splitting" did not make a hit, so the lure was changed. Today physicians are approached with the plea that the "Medical Society of the United States" will make the medical world free for democracy; it is, we are assured, a "Society of Protest Against the Autocracy of the A. M. A.," and a "Society of Medical Democracy."



MEDICAL SOCIETY OF THE UNITED STATES
3447 PINE STREET
ST. LOUIS, MO

St. Louis, Mo.
May 1 1916.

My Dear Doctor:-

Naturally men are either Conservatives or Progressives--there are always two parties in almost everything. The American Medical Association represents the conservatives; heretofore the progressives have had no great National organization.

We--the majority of the medical profession--who believe in division of fees (i. e. that the surgeon should not "hog" the whole of a patient's money and leave nothing for the family doctor) are no longer welcome in the A. M. A. We are therefore organizing the Medical Society of the United States, which will not be conducted for the benefit of a few selfish egotists. We would like to have you with us.

It costs only $1.00 to join. This covers dues for 1916 and includes expense for the beautiful certificate of membership (suitable for framing) which you will receive on admission. Fill enclosed blank and return to me with $1.00

Cordially yours,
Emory Lanphear

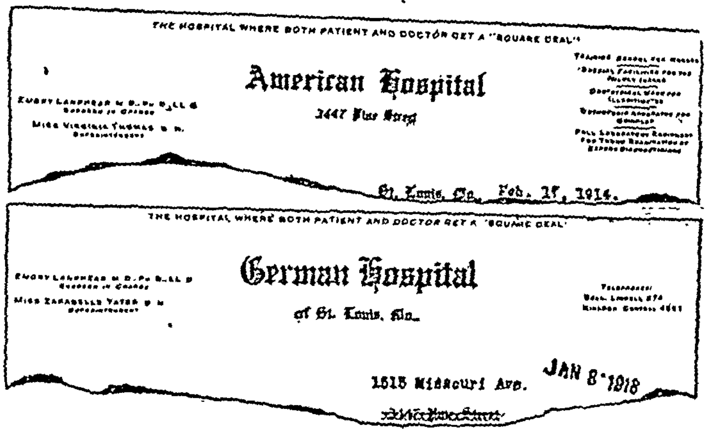
P.S. Membership in your local Society is NOT obligatory. On the line "Recommended by" put the names of two doctors (preferably of you neighborhood) who will vouch for you.

The "Medical Society of the United States," was originally organized on a basis of "fee-splitting," as is shown by the reduced facsimile of a letter sent broadcast in 1916, announcing the birth of the new "society." Apparently, "fee-splitting" as a rallying point did not bring in the desired returns, so today the "Medical Society of the United States" is alleged to be a "Society of Protest Against the Autocracy of the A. M. A."

Membership costs "only $1.00 . . . including the cost of a beautiful certificate of *membership*." No penalties or punishments are involved for belonging to other societies, and:

> "Joining our body *need not* affect your membership *in any* other society—even the A. M. A., if you wish to belong to it, and be 'bossed' by the 'Simmons Gang'."

The dollar for the "beautiful certificate" and membership is solicited by means of circular letters signed "Emory Lanphear," coming from 3447 Pine St., St. Louis, Mo., the address of what has been variously called the "American Polyclinic," the "American Hospital," and later, the "German Hospital." The "Surgeon-in-Charge" of the "German Hospital" is Emory Lanphear, M.D., C.M., Ph.D., LL.D. When running under the name of the "*American Hospital*," Lanphear solicited operative work on a "division of fees" basis, which, the general practitioner was told, meant that "you are to have 40 per cent. of all fees received from your patients sent to our staff for operation or treatment."



THE HOSPITAL WHERE BOTH PATIENT AND DOCTOR GET A "SQUARE DEAL"
American Hospital
3447 Pine Street
St. Louis, Mo. Feb. 27, 1914.

THE HOSPITAL WHERE BOTH PATIENT AND DOCTOR GET A "SQUARE DEAL"
German Hospital
of St. Louis, Mo.
1515 Missouri Ave. JAN 8 1918

Reduced facsimile of the letter-heads of an institution known variously as the "*American Hospital*" and the "German Hospital." The change in name from "American" to "German" seems to have taken place early in 1915—when things German *were more popular* and profitable than they are today!

With the change in name from "American Hospital," to "German Hospital," Lanphear appealed for a "portion of your operative work on a basis of pure reciprocity." This "pure reciprocity" seems to have been a still more liberal distribution of the patient's money, for from a 40 per cent. basis it was raised to an even fifty-fifty. Said Lanphear, in a letter sent out a few months ago:

> "*I wish also to inform you in spite of the despicable opposition of the hypocritical gang in charge of the A. M. A., and the no less contemptible action of the St. Louis Medical Society, I am going to remain in St. Louis and continue to do surgical work upon a 'division of fee' basis. To be more explicit, if you bring me a case for operation I shall allow you one half of the fee for your time, trouble, responsibility and help in the management of the case.*"

Before leaving the interesting professional personality of Lanphear, and carefully avoiding any details of a personal nature, we may remind our readers that as long ago as 1908 Lanphear was the "Dean" of the "Hippocratean College of Medicine," with A. H. Ohmann-Dumesnil, A.M., M.D., M.E., Sc.D., "Vice-Dean." At that time Lanphear sent out letters to physicians proposing the organization of a "Post Graduate Faculty" on the following basis:

> "Those who hold full professorships shall purchase stock in the corporation to the amount of $1,000.00; those who become lecturers or instructors shall pay in the sum of $500.00; those who are to be merely clinical assistants will buy ten shares of stock, $100.00."

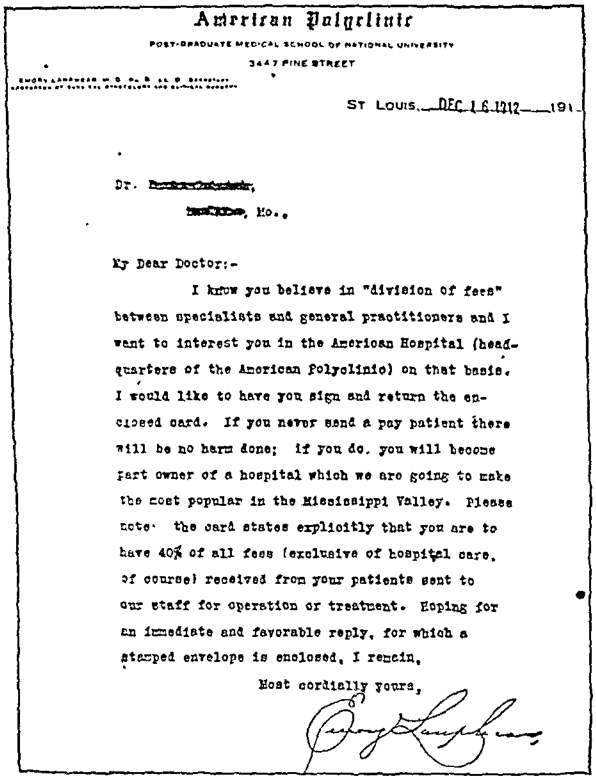
The "Hippocratean College" was a "sundown" affair; it never graduated a student, and expired in 1910.

But to come back to the "Society of Medical Democracy": the "Medical Society of the United States" seems to have been born in 1916. Its parents, so far as is apparent, seem to have been Lanphear and Ohmann-Dumesnil. The latter, it may be remembered, used to be the editor and proprietor of the *St. Louis Medical and Surgical Journal*, a publication so obviously venal, that its value to the nostrum makers, whose interests it espoused, must have been small. Advertising pages, "original articles" and "editorials"—all were used to puff nostrums of the crudest type. It was Ohmann-

Dumesnil and his journal that came to the defense of the "patent medicine" interests when they were so hard hit by Mr. Adams's "Great American Fraud" series. In commenting on this phase of "patent medicine" activities, *Collier's*, in January, 1907, said:

> "Headache powders came in for a considerable share of attention in the patent medicine articles. There was much talk of libels among the headache powder makers, but they decided upon the safer methods of hiring a meretricious medical publication, the *St. Louis Medical and Surgical Journal*, to print an article in which the *Collier's* statements were branded as lies, and the *Collier's* editors and writers as liars and libelers. This article the Proprietary Association of America circulated in pamphlet form. The journal which printed it died a natural death a few weeks later. Its editor, one O. H. Ohmann-Dumesnil, has just appeared in the public prints in an unsavory connection with a corrupt lobbying project in St. Louis."

Some of the nostrums that Ohmann-Dumesnil has recommended are: "Sanmetto," "Gonosan," "Cactina Pillets," "Pepto-Mangan," "Satyria," "Campho-Phenique," "Tongaline," "Germiletum," "Narkogen," "Nosophen," "Mercauro," "Arsenauro," and "Hydrozone." Many of these testimonials were, of course, used by the manufacturers in their advertising "literature."



American Polyclinic

POST-GRADUATE MEDICAL SCHOOL OF NATIONAL UNIVERSITY

3447 PINE STREET

ST LOUIS, DEC 16 1912 191

Dr. [redacted],

[redacted], Mo.,

My Dear Doctor:-

I know you believe in "division of fees" between specialists and general practitioners and I want to interest you in the American Hospital (headquarters of the American Polyclinic) on that basis. I would like to have you sign and return the enclosed card. If you never send a pay patient there will be no harm done; if you do, you will become part owner of a hospital which we are going to make the most popular in the Mississippi Valley. Please note: the card states explicitly that you are to have 40% of all fees (exclusive of hospital care, of course) received from your patients sent to our staff for operation or treatment. Hoping for an immediate and favorable reply, for which a stamped envelope is enclosed, I remain,

Most cordially yours,

Reduced facsimile of a letter sent out in 1912, soliciting the purchasing of stock in the "American Hospital" on a division of fee basis —forty-sixty!

At the time that the Medical Society of the United States was being organized—in 1916—there was published what purported to be a preliminary program of its first meeting. The meeting was held in St. Louis, and the program, while containing the names of men with special fads or interests to exploit, also contained the names of some men of standing. It appeared, however, on investigation, that at least some of the latter had but a hazy conception of the use to which their names were being put, and protested vigorously on learning the facts, repudiating the organization.

Now, in 1918, another drive is on for membership; letters signed "Emory Lanphear" are being sent to various selected groups of physicians. For example, the Eclectics are being coaxed by a letter which commences:

> "We want every reputable Eclectic practitioner in this country to join our society of protest against the iniquities of the A. M. A."

An identical letter has been addressed to Homeopaths, the words "Homeopathic practitioner" being substituted for "Eclectic practitioners." In all of the letters the "beautiful certificate of membership" is emphasized, and the trivial cost —"only $1.00 a year"—is referred to, while the plea: "surely you are willing to help to that amount to 'down' the 'gang' in charge of the A. M. A.," is featured. Another group of letters has gone out to the graduates of the Barnes Medical College. This commences:

> "Most graduates of 'Old Barnes' have joined our society of protest against the iniquities of the A. M. A. Why should you also not come in? It costs only $1.00 to become a member, including the cost of a beautiful certificate of membership."

Still another group appeal is based on sex; thus Lanphear:

> "We want every reputable 'lady physician' in this country to join our society of protest against the iniquities of the A. M. A."

And yet another:

> "You formerly belonged to the Tri-State Medical Society, of which I was Treasurer for 20 years. It is now dead. I wish you would join our new society which has superseded Tri-State in this territory."

With these various letters is enclosed a "preliminary program" of the 1918 meeting which is to be held October 8 and 9 in Chicago. As might be expected, many of the names on the program are characteristic of the organization and an interesting "story" might be made from the material in The Journal's files on the individuals. Such names are of men, who, professionally speaking, range from faddists, who ride grotesque and bizarre medical hobbies, to those who with special interests to exploit and unable to use reputable medical organizations for that purpose, take refuge in such hybrid conglomerations as the Medical Society of the United States. Not that the program contains the names of crude quacks, or obvious medical swindlers. It is representative, rather, of that twilight zone of professionalism, the penumbra, in whose uncertain light it is difficult to distinguish between the unbalanced visionary, with a fad, and the more sinister near-quack, with a "scheme."

Correspondence

"REPORT OF A CASE OF PRIMARY TUBERCULOSIS OF FAUCIAL TONSILS"

To the Editor:—In The Journal, Sept. 21, 1918, p. 968, there appears a "Report of a Case of Primary Tuberculosis of the Faucial Tonsils" by Major Oertel and Captain Griot. Without going into the subject of primary tuberculosis of the faucial tonsils, I should like to call attention to the fact that the report is far from convincing. As a matter of fact, it is rather self-contradictory. From the physical examination it would appear that the patient in question was suffering from advanced tuberculosis of the larynx and pulmonary tuberculosis. The laryngeal condition would indicate disease of rather long standing. The lung signs, although limited, do not preclude the possibility of more extensive disease of long duration. The laboratory report by no means clinches the diagnosis and describes nothing characteristic. That the mucus recovered from the larynx showed the presence of tubercle bacilli would further indicate very conclusively the presence of advanced pulmonary and laryngeal tuberculosis. Then why a case of primary tuberculosis of the faucial tonsils? Perhaps the authors have some more conclusive evidence for their remarkable statement.

Herman Schwatt, M.D., New York.

To the Editor:—In The Journal, September 21, there appeared a "Report of a Case of Primary Tuberculosis of the Faucial Tonsils" by Major T. E. Oertel and Capt. George A. Griot of Camp Logan, Texas. I am sure that on further study of this case the authors would not report it as one of primary tuberculosis of the faucial tonsils. That it was one of tuberculosis could not be questioned; but the history of the case, as given, would certainly lead us to class it as one of secondary tuberculosis following an infection in the lungs. The fact that the larynx and trachea showed such marked tuberculous changes would certainly preclude the possibility of knowing which was the first to be affected. My observations do not lead me to believe in even primary tuberculosis of the larynx, and I am sure it would be difficult to find a case of primary tuberculosis of the tonsil. These remarks are in no wise a criticism but merely a plea for more accurate deductions.

Dunbar Roy, M.D., Atlanta, Ga.

THE MEDICAL SECTION OF THE ADVISORY COMMISSION STILL BROADENING ITS FUNCTIONS

To the Editor:—According to the lay press, the chairman of the Medical Section of the Advisory Commission of the Council of National Defense has rushed in with the members of his Volunteer Medical Service Corps to take a hand in, if not to take charge of, the outbreak of influenza in the country. In Illinois, and I suppose in other states, he telegraphs his state chairman to appoint a committee to attend to the situation, and forthwith a committee for that purpose springs into existence.

What does this action mean? There are only two obvious answers. Either the usual constituted authorities for taking care of epidemics have failed, or the chairman of the Medical Section of the Advisory Commission is a sort of medical "all highest" in the United States, who is superior to all regular agencies and may step in when he sees fit.

We have for some time been accustomed to Colonel Martin's acting as though the Surgeon-Generals had to have some one to take over a considerable part of their functions in medical military affairs. But this excursion into administering the public health of the nation indicates a broadening of his self-appointed functions. Why this further assumption of authority? Have the usual federal, state and municipal authorities proved unequal to their duties? It is their specific function to take care of such situations. They are paid for it, and they have men especially trained for it. Has there been a breakdown in these agencies? Has Surgeon-General Blue gone in panic to Colonel Martin and appealed to him to help him out of a situation that the Public Health Service of the United States cannot handle for the country at large? Have the state boards of health and the municipal boards of health come crying to him for help or proved futile, that these new bodies should suddenly step in to assume their task, or show them how to do it, or without invitation to offer to help them do it?

There is no such crisis in the administration of our public health affairs. Even if there were such a crisis, is there any reason to believe that Colonel Martin is especially qualified to take care of the situation? He is not noted as a sanitarian, and the committees he appoints—if the Illinois committee is a sample—are not superior as sanitarians to our present regular officers. On his Illinois committee he interlards between busy practitioners the regular officers who ordinarily have charge of such work.

And one wonders how these officers feel about it. How do the Army and Navy and Public Health Service officers, the municipal and state health officers feel about sitting on these new committees suddenly formed to take over work that is usually up to them to do? I do not know how much open resentment there may be, but I think it would be hard to find a better illustration of mischievous meddling with other men's duties than this, or of actions tending more to confusion in the administration of public affairs and more to the lowering of the spirit of public officials.

If the newspaper publicity given to this action of Colonel Martin's—and the publicity was as great as usual and probably just as expensive—carries any implication to the public mind, it is that the usual authorities for looking after epidemics are unequal to their duty of taking care of this epidemic, and we must have a "god from the machine" come in to do it for them. This act, in fact, like Colonel Martin's attempt to force on the profession his Volunteer Medical Service Corps, is the act of one who apparently feels that he is a sort of national medical Pooh-Bah. The Medical Departments of the Army and Navy, the Office of the Provost Marshal-General, the Public Health Service, the offices of administration of state and local public health affairs—apparently all of these came within the scope of his functions—at least until the Provost Marshal-General announced last week that "membership in Volunteer Medical Service Corps is not service in the military establishment and does not therefore affect in any way the status of registrants before the Selective Service Boards."

It is a mischievous situation that Colonel Martin is forcing on us. The profession is confused by his actions. He has, I should estimate, sent probably a million letters to the profession under government frank about matters more or less connected with the war. Physicians do not know how authoritative these communications are. He has a way of writing—as he did in the case of his Volunteer Medical Service Corps, telling men to sign—as if he were clothed with federal authority to command, when, as a matter of fact, he is exploiting his own desires and plans; and physicians often do not know how much his communications represent federal authority and how much his own personal activities and views.

I am sure I sense the attitude of the profession when I say that its members are zealous in the highest degree to do all they can now for the public good, to know the wishes of the government in order to try to comply with them; that they accept instantly and without reservation—accept as orders—the communications of the Surgeon-Generals and the Provost Marshal-General. But—speaking now only for the profession of Chicago which I believe I know—a great many of them would prefer to get their orders and their instructions from the Surgeon-Generals of the Army, Navy, the U. S. Public Health Service and the Provost Marshal-General, who surely are competent to issue them.

William Allen Pusey, M.D.,
President of the Chicago Medical Society.

AN AUTHOR PROTESTS

To the Editor:—May I not thank you for the complimentary review of my book "Diet and Health with Key to the Calories" and at the same time take issue with your reviewer on the following points? He says: "By its title it assumes to be a parody on the guide of a well known religiomedical cult. This, however, appears only slightly in the text in the form of a few of the side headings." I fear he has missed the point that I have used their terminology throughout and my chapter of testimonies is a model of their literature. Furthermore, the reviewer says that the humor is a little forced. Again I differ with him. It is a great deal more than a little forced. It is very much forced, in fact almost forcibly forced. It has been killed, assassinated, annihilated, and dragged in most any place and any time. I did it purposely. Who reads an ordinary book on dietetics? Even a doctor will read mine!

Lulu Hunt Peters, Los Angeles.

Notification of Ophthalmia Neonatorum.—According to the *Medical Officer*, the local government board for Scotland has issued regulations under the public health act of 1897 for the compulsory notification of ophthalmia neonatorum in Scotland, dating from Nov. 1, 1918. Although no direct arrangement is made by the local government board for treating and following up these cases, it is pointed out that this follow-up work might properly come under the duties assigned to health visitors under the regulations relating to maternity service and child welfare, and that the child welfare grant is available for this purpose. It is therefore hoped by the board that the local authorities will avail themselves of this resource and see that all notified cases of ophthalmia neonatorum receive immediate treatment. The Royal Commission on Venereal Diseases reported that probably 25 per cent. of all cases of blindness are due to ophthalmia neonatorum, and that probably 50 per cent. of all blindness is due to the venereal diseases, syphilis being a prolific cause.

Queries and Minor Notes

Anonymous Communications and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted, on request.

PRINTING OF HARRISON NARCOTIC REGISTRY NUMBER ON PRESCRIPTION BLANKS

To the Editor:—Some time ago I went to the expense of having 5,000 prescription blanks printed and bound containing my name and address, also my registration number under the Harrison Narcotic Law. My druggist informs me that when writing a narcotic prescription it is necessary for me to append under my signature my registry number, address and date, and that having the number and address printed on them will not comply with the law. Please let me know if he is correct.

Z. S. H., Kentucky.

Answer.—In the Harrison Narcotic Law and regulations issued by the Treasury Department as Internal Revenue Regulations No. 35, Section 2 B, it is stated that "such prescription shall be dated as of the date on which signed and shall be signed by the physician, dentist or veterinary surgeon who shall have issued the same." Article 11 of the regulations states that "drugs dispensed or distributed under and in pursuance of a written prescription issued by a physician, dentist, or veterinary surgeon duly registered under the act must show the name and address of the patient, the date, the name and address of the physician, and his registry number. . . . All prescriptions must be dated and signed on the date when issued." It is, therefore, necessary for the physician to write only the date and signature. The name, address and registry number may be printed on the prescription blank.

CALCIUM CHLORID ANTIFREEZE MIXTURE

To the Editor:—In Queries and Minor Notes (The Journal, Aug. 31, 1918, p. 768), in discussing the use of calcium chlorid solutions to prevent freezing in automobile radiators, you stated incidentally that such solutions have a harmful effect on the radiator, especially on seams and joints. The following amplification of the statement may be of interest to your readers:

At the temperatures in question, calcium chlorid solutions have a decidedly harmful effect on the radiator, not only on the seams and joints, but also on the whole metal surface. The effect is, of course, usually more apparent at the seams and joints. No one who has not studied this effect perhaps realizes the extent of the pitting and corrosion produced. The effect is, of course, produced through the appreciable hydrolysis of the salt in question at the boiling temperature.

Commercial antifreeze mixtures generally contain chiefly or wholly calcium chlorid or some substance as harmful in its effect. The only safe method is to employ an alcohol-water mixture, which is perfectly harmless. The extra trouble involved, through continual evaporation or expense difference, is more than compensated by the saving in possible radiator repairs.

Stanley L. Chisholm, Washington, D. C.
Sergeant, First Class, Chemical Warfare Service, U. S. Army.

WAR BILLS OF PHYSICIANS

The following is a copy of a card sent to his patients by an Indiana physician about to go into military service:

"LIBERTY STATEMENT"

M................................

I am sending you this statement because I am expecting to leave soon and must ask that you call at once and settle your account. It is absolutely necessary that I collect all my outstanding accounts in order that I may meet my own financial obligations and make arrangements for my family during my absence in the Army.

I prefer to settle all accounts personally rather than leave them in the hands of an Agent or Attorney. I will expect to hear from you at an early date.

Respectfully,

....

SUGAR TREATMENT OF TUBERCULOSIS

To the Editor:—Please give me some information concerning a tuberculosis cure called "Lo Monaco," which is being recommended here by the official Public Health Service. The substance comes in tablets to be dissolved, boiled and injected intramuscularly. I have been unable to get any information about the true nature of this remedy, and do not remember having read anything about it in The Journal.

M. P. Colmenares, M.D., Orizaba, Vera Cruz, Mexico.

Answer.—A discussion of this subject appears in Queries and Minor Notes, The Journal, Sept. 28, 1918, p. 1083.

Medical Education and State Boards of Registration

COMING EXAMINATIONS

Arkansas: Little Rock, Nov. 12-13. Sec., Regular Bd., Dr. T. J. Stout, Brinkley, Ark.; Sec., Eclectic Bd., Dr. C. E. Laws, 803½ Garrison Ave., Ft. Smith.

California: Sacramento, Oct. 21-24. Sec., Dr. C. B. Pinkham, Butler Bldg., San Francisco.

Connecticut: New Haven, Nov. 12-13. Sec., Regular Bd., Dr. C. A. Tuttle, 196 York St., New Haven; Sec., Eclectic Bd., Dr. James E. Hair, 730 State St., Bridgeport; Sec., Homeopathic Bd., Dr. E. C. M. Hall, 82 Grand Ave., New Haven.

District of Columbia: Washington, Oct. 8. Sec., Dr. Edgar P. Copeland, The Rockingham, Washington.

Georgia: Atlanta, Oct. 8-9. Sec., Dr. C. T. Nolan, Marietta.

Kansas: Topeka, Oct. 8-9. Sec., Dr. H. A. Dykes, Lebanon.

Maine: Portland, Nov. 12-13. Sec., Dr. Frank W. Searle, 776 Congress St., Portland, Me.

Massachusetts: Boston, Nov. 12-14. Sec., Dr. Walter P. Bowers, No. 1 Beacon St., Boston, Mass.

Michigan: Lansing, Oct. 8-10. Sec., Dr. B. D. Harison, 504 Washington Arcade, Detroit.

Nevada: Carson City, Nov. 4. Sec., Dr. S. L. Lee, Carson City.

New Jersey: Trenton, Oct. 15. Sec., Dr. Alex. MacAlester, 438 E. State St., Trenton.

New Mexico: Sante Fe, Oct. 14. Sec., W. E. Kaser, East Las Vegas.

Oklahoma: Oklahoma City, Oct. 8-9. Sec., Dr. J. J. Williams, Weatherford.

Texas: Dallas, Nov. 19-21. Sec., Dr. M. F. Bettencourt, Mart.

Utah: Salt Lake City, Oct. 7-8. Sec., Dr. G. F. Harding, 405 Templeton Bldg., Salt Lake City.

West Virginia: Charleston, Nov. 19-21. Sec., Dr. S. L. Jepson, Masonic Bldg., Charleston.

Utah April Examination

Dr. G. F. Harding, corresponding secretary of the Utah State Board of Medical Examiners, reports the written examination held at Salt Lake City, April 2-3, 1918. The examination covered 19 subjects and included 100 questions. An average of 75 per cent. was required to pass. Four candidates were examined, all of whom passed. The following colleges were represented:

College	PASSED	Year Grad.	No. Licensed
Chicago College of Medicine and Surgery		(1917)	1
Western Reserve University		(1917)	1
Jefferson Medical College		(1917)	1
University of Pennsylvania		(1917)	1

Dr. Harding also reports that 2 candidates were licensed through reciprocity at the meeting held, April 5, 1918. The following colleges were represented:

College	LICENSED THROUGH RECIPROCITY	Year Grad.	Reciprocity with
University of Louisville		(1916)	Kentucky
Vanderbilt University		(1913)	New York

Maryland June Examination

Dr. J. McP. Scott, secretary of the Board of Medical Examiners of Maryland, reports the written examination held at Baltimore, June 18-22, 1918. The examination covered 9 subjects and included 90 questions. An average of 75 per cent. was required to pass. Of 56 candidates examined, 51 passed and 5 failed. Eighteen candidates were licensed through reciprocity and one was granted a reregistration license. The following colleges were represented:

College	PASSED	Year Grad.	Per Cent.
Howard University (1917) 80; (1918) 76, 91, 92.			
Indiana University		(1917)	84
Johns Hopkins University (1914) 87; (1915) 90; (1917) 80, 82, 83, 84, 85, 86, 91; (1918) 80, 83, 83, 84, 84, 85, 86, 87, 87, 87, 88, 88, 88, 89, 89, 90, 91, 92, 92, 94.			
Maryland Medical College (1904) 84;		(1912)	83
University of Maryland (1916) 76, 82; (1917) 79; (1918) 75, 77, 78, 85, 85, 86, 87, 88, 91.			
New York Homeo. Med. College and Flower Hospital		(1918)	80
Hahnemann Med. College of Philadelphia		(1918)	85
Meharry Medical College		(1918)	92
	FAILED		
Howard University		(1918)	74
Johns Hopkins University		(1918)	71
Maryland Medical College		(1913)	*
Meharry Medical College		(1916)	65, *

*No grade given.

College	LICENSED THROUGH RECIPROCITY	Year Grad.	Reciprocity with
Columbian University		(1904)	Louisiana
Georgetown University		(1895)	Dist. Colum. W. Virginia

Atlanta Medical College	(1914)	Virginia
Bennett College of Eclectic Medicine and Surgery	(1886)	Illinois
Chicago College of Medicine and Surgery	(1914)	Missouri
Baltimore Medical College (1908)	(1913)	W. Virginia
College of Physicians and Surgeons, Baltimore	(1885)	Colorado
		Virginia
John's Hopkins University	(1914)	Penna.
Maryland Medical College	(1912)	Virginia
University of Maryland	(1915)	N. Carolina
Marion-Sims College of Medicine	(1897)	Missouri
Medical College of Virginia (1900)	(1910)	Virginia
	(1911)	S. Carolina
University of Munich	(1900)	Dist. Colum.

Michigan June Examination

Dr. B. D. Harison, secretary of the Michigan State Board of Registration in Medicine, reports the written examination held at Ann Arbor, June 11-13, 1918. The examination covered 14 subjects and included 100 questions. An average of 75 per cent. was required to pass. Of 76 candidates examined, 75 passed and 1 failed. Twenty-nine candidates were licensed through reciprocity. The following colleges were represented:

College PASSED	Year Grad.	Per Cent.
Johns Hopkins University	(1918)	85.8
Detroit College of Medicine and Surgery	(1918)	79.9, 80.9, 81.2.
University of Michigan Homeo. Med. Sch.	(1918)	82.2, 82.7, 83.1, 83.2, 84.1, 84.6, 85.6, 86.9, 87.5, 89.1, 89.2, 89.3, 89.3.
University of Michigan Medical School	(1918)	78.8, 80.7, 81.2, 81.3, 81.4, 81.7, 81.9, 81.9, 82, 82.1, 82.2, 83.1, 83.1, 83.2, 83.3, 83.8, 83.9, 84.1, 84.1, 84.1, 84.4, 84.6, 84.8, 84.9, 85, 85, 85.1, 85.1, 85.2, 85.2, 85.3, 85.4, 85.4, 85.5, 85.5, 85.5, 85.7, 86, 86.2, 86.3, 86.4, 86.5, 86.6, 86.8, 86.8, 86.9, 87.2, 87.4, 87.8, 87.9, 88, 88, 88.3, 88.4, 88.8, 89, 89.4.
Columbia University	(1918)	86.1
FAILED		
University of Michigan Medical School	(1918)	*

*No grade given.

College LICENSED THROUGH RECIPROCITY FROM JAN. 31 TO AUG. 22, 1918	Year Grad.	Reciprocity with
University of Colorado	(1913)	Colorado
George Washington University	(1907)	Dist. Colum.
Bennett Coll. of Ecl. Med. and Surg. (1886) Texas;	(1894)	Illinois
Coll. of Phys. and Surgs., Chicago (1906) Indiana;	(1909)	Illinois
Northwestern University	(1908)	Nebraska
Rush Medical College (1915)	(1917)	Illinois
University of Illinois (1906) (1912)	(1916)	Illinois
Indiana University	(1917)	Indiana
Kentucky School of Medicine	(1905)	Kentucky
Kentucky University	(1900)	Kentucky
Louisville and Hospital Medical College	(1908)	W. Virginia
		Kentucky
Louisville Medical College	(1905)	Indiana
University of Louisville (1908)	(1916)	Kentucky
Johns Hopkins University (1899) Illinois;	(1917)	Maryland
University of Michigan Medical School (1897)	(1900)	Ohio
Medical College of Ohio	(1895)	Penna.
University of Pennsylvania	(1913)	Dist. Colum.
Woman's Medical College of Pennsylvania	(1895)	Penna.
Vanderbilt University	(1901)	Tennessee
University of St. Joseph, Beirut, Syria	(1903)	Iowa

Wisconsin June Examination

Dr. J. M. Dodd, secretary of the Wisconsin State Board of Medical Examiners, reports the oral, practical and written examination held at Milwaukee, June 25-27, 1918. The examination covered 12 subjects and included 105 questions. An average of 75 per cent. was required to pass. Of the 25 candidates examined, 24, including 2 osteopaths, passed and 1 failed. Four candidates were licensed through reciprocity. The following colleges were represented:

College PASSED	Year Grad.	Per Cent.
George Washington University	(1916)	88.7
Chicago College of Med. and Surg. (1915) 75, 77.6;	(1916)	77.4
Northwestern University	(1918)	81.4
Rush Medical College (1916) 93.5; (1918)* 87, 89.5, 92.		
University of Illinois	(1917)	90.3
Baltimore University	(1903)	75.5
University of Michigan Medical School	(1898)	86.2
[illegible] University	(1918)	87.5
[illegible] ollege	(1918)	82.4
	(1918)	79.6, 82.2, 82.5, 84, 84.1, 85.7, 90.5.
[illegible] Athens	(1912)	75.8
FAILED		
Meharry Medical College	(1917)	66.4

College LICENSED THROUGH RECIPROCITY	Year Grad.	Reciprocity with
American Medical Missionary College	(1901)	Illinois
Chicago Physiomedical Institute	(1887)	Illinois
Rush Medical College	(1897)	Minnesota
Tufts College Medical School	(1904)	Michigan

*Degrees for these three candidates withheld pending completion of hospital internship.

Book Notices

Biochemical Catalysts in Life and Industry. *Proteolytic Enzymes.* By Jean Effront, Professor in the New University and Director of the Institute of Fermentations of Brussels. Translated by Samuel C. Prescott, Professor of Industrial Microbiology, Massachusetts Institute of Technology, assisted by Charles S. Venable. Cloth. Price, $5. Pp. 752. New York: John Wiley & Sons, 1917.

This is a discussion of biochemical catalysts or enzymes for nitrogenous substances only. Though the greater part of the text deals with the enzymes for protein substances as found in the digestive secretions of the animal body, the proteases of animal and plant tissues and bacteria are likewise considered. A sixth of the book deals with the coagulating enzymes (thrombin, myosinase and rennet). The greater part discusses pepsin, the various trypsins and erepsins, and the amidases. One hundred and seventy-five pages are devoted to the use of the various enzymes in bread making, brewing, distilling, the manufacture of cheese, tanning, and in agriculture. The distribution, methods of preparation and mode of action of the various enzymes under different experimental conditions are fully and accurately considered. The excellence of the book on that score can hardly be questioned. It is gratifying, furthermore, to have at hand a ready reference book of small size in which the practical usefulness of the nitrogenous enzymes to industry is adequately considered. The parts of the book dealing with the mechanism of secretion of gastric and pancreatic juice are disappointing. Following Pawlow and his pupils, the author takes the view that the fasting stomach contains "very little juice normally." As a result of this erroneous conception, the importance of psychic or appetitic (nervous) juice is greatly overestimated. Gastric secretin or gastrin receives no mention. The physician will certainly find the parts of the book dealing with mechanical physiology quite fragmentary. It is to be regretted that the author did not incorporate the results of American research on sundry questions relating to the activity of the digestive glands. Although the study of the coagulation of the blood has been made the subject of a particularly important chapter "benefiting from recent acquisitions," not a single reference is made to the careful and interesting work of the American physiologist, Howell. The preliminary work of Howell's pupil, Rettger, is mentioned, but his publication is cited in the bibliography with a German title, although it is published in English. The important work of Howell himself (and his pupils) contained in ten or twelve original papers is not even alluded to.

Chemistry of Food and Nutrition. By Henry C. Sherman, Ph.D., Professor in Columbia University. Second edition. Cloth. Price, $2. Pp. 454, with 16 illustrations. New York: The Macmillan Company, 1918.

In the presentation of his theme the author discusses first the chemical nature and the nutritive functions of the substances that serve as sources of energy in nutrition; then the nutritive requirements in terms of energy; protein; the more prominent inorganic elements and the vitamins, and finally the bearing of the various factors of food value on the problems connected with the economic use of food. Such is the scope of a work that has deservedly reached a second edition and will in the years to come reach many more because of its logical and simple style, its accuracy, and its delightful presentation. Every physician who wishes to inform himself in a general way of the present status of our knowledge of the nutrition of man will find the book a short but invaluable and reliable text giving all essential facts. The excellent bibliography makes it readily possible to obtain information in greater detail on any desired topic. Whereas, most of the facts concerning the nutritional importance of proteins, carbohydrates and fats are found in other texts, the latter are wofully deficient in a discussion of the inorganic foodstuffs and in mineral metabolism (chlorin, sulphur, phosphorus, sodium, potassium, calcium, magnesium and iron). We know of no other book of moderate size that deals so thoroughly with these essentials to nutrition. Approximately 176 pages are devoted to the inorganic foodstuffs, and justly so; for, as the author reminds us ten of the fifteen elements or seven of the twelve that are essential in amounts sufficiently large to be measurable by present methods, must be furnished by some ingredients of the intake other than the simple proteins, carbohydrates and fats. In this discussion the element iodin is undeservedly slighted. The American physician will note with pride that the significant advances in metabolism and nutrition during the last decade or more have for the most part been made by American investigators. The book embodies the important results in this field of Lusk, Atwater, F. G. Benedict, Osborne, Mendel, Van Slyke, Folin, Hart, McCollum, Chittenden, Du Bois, Forbes and Sherman himself. There is no excuse for any physician to remain unfamiliar with the important and interesting work of these men, when their work is presented comprehensively and yet most interestingly in a volume of moderate size and small cost.

The Hodgen Wire Cradle Extension Suspension Splint. The Exemplification of This Splint with Other Helpful Appliances in the Treatment of Fractures and Wounds of the Extremities and Its Application in Both Civil and War Practice. By Frank G. Nifong, M.D., F.A.C.S. With an introduction by Harvey G. Mudd, M.D., F.A.C.S. Cloth. Price, $3. Pp. 162, with 124 illustrations. St. Louis: C. V. Mosby Company, 1918.

This book describes the methods of application and uses of the Hodgen extension and suspension splint. This splint, it is pointed out in the historical introduction, was described by Professor Hodge at the time of the Civil War as a modification of the Nathan R. Smith anterior splint for fractures of the thigh. The author discusses the general mechanism of fractures of the femur, splints for immobility and extension, splints for immobility and suspension, splints for immobility, extension and suspension, and the Hodgen extension suspension splint. The final chapter is devoted to the use of accessory appliances. It is a practical little book.

A Text-Book of Elementary Military Hygiene and Sanitation. By Frank R. Keefer, A.M., M.D., Colonel, Medical Corps, United States Army. Second edition. Cloth. Price, $1.75 net. Pp. 340, with illustrations. Philadelphia: W. B. Saunders Company, 1918.

Colonel Keefer's textbook was prepared primarily for the instruction of cadets at the United States Military Academy at West Point, and is adapted chiefly for the uses of the officer of the line rather than for the medical officer. Since the first edition was issued in 1914, the new type of warfare has necessitated considerable changes in this book, particularly the problems of trench sanitation. These problems are considered in a special chapter. The book is brief yet complete, and written in plain language so as to be readily understood by any man qualified to hold the rank of officer in our army.

Military Surgery of the Zone of the Advance. By George de Tarnowsky, M.D., F.A.C.S., Major, M. C., U. S. R. Leather. Price, $1.50. Pp. 330, with illustrations. Medical War Manual No. 7. Philadelphia: Lea & Febiger, 1918

The author's foreword modestly states that this is not a textbook on military surgery, but a vade mecum on the treatment of war wounds. But the difference between this and a textbook is that theories and nonessentials are here omitted, and that essentials are concisely presented. It is a practical, complete handbook for the Army surgeon on the transportation and management of the wounded and the methods of treatment that have been tried out and found satisfactory in the Allied armies during the four years of the war. It is based on personal observation by the author on the French, British and Italian fronts; hence it is up to date and represents the methods and procedures of today.

The first six chapters are devoted to a general description of the terrain of the French and British zone of advance, including description of first-aid station, transportation equipment, regimental-aid, station, field hospital, etc. In separate chapters are described the bacteriology of war wounds, traumatic shock, tetanus, gas bacillus gangrene, spinal injuries, burns, gas poisoning, the Carrel-Dakin technic; wounds of the face and neck, of the thorax, of the abdomen, of the bladder and external genitalia, of peripheral nerves, of soft tissues. In fact, the whole field of surgery, so far as it might be met in war work, is covered. While condensation and conciseness in statements evidently have governed the author, at the same time, this has not hindered the giving of the necessary details for a clear understanding of the subject discussed. The purpose has been to have a large amount of material in a small space; hence the page is full—there is no padding, no waste margin at the top, bottom or sides, and no leading. The book is printed on thin paper, and while it contains 330 pages it can easily be carried in the pocket.

Medicolegal

Husband Liable for Medical Services Only Not Shown Bound by Payment

(Vaughan v. Mansfield (Mass.), 118 N. E. R. 652)

The Supreme Judicial Court of Massachusetts, in sustaining exceptions to a verdict for the plaintiff, says that it was not in dispute that the medical services for which the plaintiff sought compensation were required by, and were rendered to, the wife and minor child of the defendant as claimed. The evidence warranted a finding that the defendant had seen the plaintiff at the defendant's house and that he knew the visits there were made by the plaintiff, as a physician, in response to calls from the wife of the defendant. There was also evidence that the plaintiff had sent bills from time to time to the defendant's residence, through the mail. There was no evidence that the defendant ever had forbidden the plaintiff to render, or the wife or child in the presence of the plaintiff to receive, the services of the plaintiff, on his account. It followed that a charge in this regard to the jury was sufficiently favorable to the defendant, which was that "a husband is required to furnish the necessaries to his wife and minor child, and he is liable for the necessaries furnished to his wife and child when they live with him, and if the plaintiff's services were necessary to the defendant's wife and minor child, the defendant would be liable for their reasonable cost." And this disposed of the exception of the defendant to a refusal to rule that "the defendant was not liable to the plaintiff for this bill, even if it was for necessaries furnished to his wife and minor child, unless the defendant refused or failed or neglected to furnish them himself."

Under these circumstances the presumption of the agency of the wife, which is inferred from her relation to her husband as manager of the household, to pledge her husband's credit for medical services that are reasonably necessary for her or the family, was not rebutted by proof that the defendant privately had instructed his wife never to run any bills, and had given her money from time to time to pay all expenses when she told him she needed it.

But, in answer to the defense that the action was barred by the statute of limitations, the plaintiff merely testified that "he had received a payment of five dollars" on account in July, 1908. He offered no evidence to prove that the payment was made by the defendant, by the wife of the defendant, or by any one who had authority to act for the defendant. The court is of the opinion that this testimony went no farther than proof of payment by a stranger, and was insufficient as evidence for a jury to find an acknowledgement on the part of the defendant of a subsisting liability; and the court thinks that the jury should have been so instructed.

What Is an "Accident" or "Accidental"

(Lickleider v. Iowa State Traveling Men's Association (Ia.), 166 N. W. R. 363)

The Supreme Court of Iowa says that one thing at least is well settled: The words "accident" and "accidental" have never acquired any technical meaning in law, and when used in an insurance contract they are to be construed and considered according to the common speech and common usage of people generally. Hundreds of attempts have been made by the courts to define these words in other terms, and while some of them may be regarded helpful so far as they adhere to popular usage, others have served only to confuse the situation, if not in fact grossly to mislead. Certain it is that no attempt in this direction is in any respect an improvement on the definition found in our standard lexicons. It is an event from an unknown cause or an unexpected event from a known cause; a thing done or disaster caused without design or intention; an unusual and unexpected result attending the performance of a usual or necessary act.

There is, however, another alleged definition which has had a degree of judicial sanction which ought not to be passed without notice. According to this definition, an injury happening to an insured person through his own voluntary act is not an accident, nor is his hurt to be attributed to accidental means—a proposition that is wholly at variance with every statement of the true rule. It may be, and it is true, that if the insured does a voluntary act, the natural, usual and to be expected result of which is to bring injury on himself, then a death so occurring is not an accident in any sense of the word, legal or colloquial, and it is only when thus limited that the rule so stated has any proper application. It makes no difference whether the injured man or some other person voluntarily sets in motion the first of a series of events which in connected line of causation results in his injury or death. If the resulting injury and violence to him "unexpectedly took place," or was "an unexpected result from a known cause," or was produced "without design or intention," or was "an unusual and unexpected result attending the performance of a usual or necessary act," or was an "event happening without the concurrence of the will of the person by whose agency it was caused," or if it was "caused or produced without design," it falls directly within the letter and spirit of the definition that has been placed on the words by the most competent lexicographers as well as by our most eminent jurists who have given the matter attention.

In this case a holder of a policy or certificate of accident insurance issued by the defendant, in attempting to remove an automobile tire which for some reason resisted his efforts, knelt on one knee, took hold of the casing with both hands, pulling and jerking at it for some time, when it came off with a snap and such suddenness as to cause him to slip or stagger back with the tire in his hands. He immediately turned pale, complained of being very ill, put his hand to his head, and lay down on the ground. Help was called, but he died about an hour later. A postmortem examination was made of the body by three physicians, who found that the immediate cause of death was a blood clot in the right coronary artery near the heart. Two of the physicians attributed the death to arteriosclerosis, while the third found no more arteriosclerosis than is usual with a man of such size and age. The court holds that a case was made on which the plaintiff was entitled to go to the jury, and that it was error to direct a verdict for the defendant. If the arteries of the insured were sclerotic, but the sclerosis was only such as is the natural or usual accompaniment of increasing years, the fact, if it was a fact, that a bodily injury sustained by him would more likely be fatal than would be the case if such condition did not exist would not prevent a recovery on the policy should it otherwise appear that the injury was of the nature or kind described in the contract.

Liability for Malpractice in Performing an Illegal Operation

(Lembo v. Donnell (Maine), 103 Atl. R. 11)

The Supreme Judicial Court of Maine, in overruling exceptions to a ruling that overruled a general demurrer filed by the defendant, says that this was what is termed an action on the case brought to recover damages against the defendant, a physician, for malpractice while performing an operation to procure an abortion on the plaintiff, and for unskilled treatment subsequent to the operation. The basis of the defendant's exceptions lay in his position that as the plaintiff consented to the operation she could not recover damages because the operation was an illegal one. In a similar case, *Miller* v. *Bayer,* 94 Wis. 123, 68 N. W. 869, the court said:

> It is further contended that plaintiff cannot recover, because she submitted to the operation performed on her. Such is not the law. Consent by one person to allow another to perform an unlawful act on such person does not constitute a defense to an action to recover the actual damages which such person thereby received.

This court agrees that this statement of the law is correct.

Society Proceedings

COMING MEETINGS

American Association of Railway Surgeons, Chicago, Oct. 16-18.
American Public Health Association, Chicago, Oct. 14-17.
Assn. for S. & P. of Inf. Mort., Asheville, N. C., Nov. 11-14, 1918.
Delaware State Medical Society, Wilmington, Oct. 8.
Southern Medical Association, Asheville, N. C., Nov. 11-14, 1918.
Vermont State Medical Society, Burlington, Oct. 10-11.
Virginia State Medical Society, Richmond, Oct. 22-25.

KENTUCKY STATE MEDICAL ASSOCIATION

Sixty-Eighth Annual Meeting, held at Louisville, Sept. 4-6, 1918

The President, Dr. J. S. Lock, Maysville, in the Chair

Diagnosis of Gastric and Duodenal Ulcer

Dr. J. A. Sweeney, Louisville: Other and older methods must not be discarded for the roentgen ray although it is of great value in demonstrating the size, location, and character of the ulcerations.

The operator with the greatest experience in stomach surgery and surgical pathology, is more likely to interpret correctly that which he encounters in the gastric area, than one who has had less experience, which, no doubt, accounts for the very large number of ulcers diagnosed by some surgeons, as compared to others, and the varying statistics as to the frequency of the ulcer.

DISCUSSION

Dr. C. W. Dowden, Louisville: There is only one method by which gastric and duodenal ulcer can be diagnosed positively, and that is roentgenography. There are absolutely no symptoms that might be referred to a gastric or duodenal ulcer that cannot come from disease of the pancreas, the gallbladder, or even the appendix. While I may diagnose pyloric obstruction, I always reserve the right to say that the trouble may be due to an ulcer, to disease of the gallbladder or appendix. In a number of instances pyloric obstruction may be present with little defect of the pylorus or duodenum, and at operation no ulcer is found; but there is a diseased gallbladder with or without stones, or possibly dense adhesions which disturb the normal contour of the duodenum, and which present difficulties in diagnosis.

SYMPOSIUM ON CHRONIC INTERSTITIAL NEPHRITIS

Etiology

Dr. F. H. Clarke, Lexington: I believe clinicians agree with Rosenstein that in the great majority of cases of primary chronic interstitial nephritis, the genuine contracted kidney, the cause is unknown. Heredity and age doubtless play a prominent part. There is considerable evidence of an hereditary tendency or susceptibility to kidney disease. I have noticed this in my own experience. It is generally conceded that the active cause or causes of chronic nephritis are in the blood; that the blood contains the toxic material which may produce the morbid changes in the kidneys. Probably the same toxic agents, when present in the blood in large quantities, may produce a rapid and severe toxemia which terminates in an acute inflammation. When present in less quantity and acting slowly these toxins may bring about a chronic nephritis without the acute stage. Aside from its hereditary influence, syphilis does not often have an active part in causing contracted kidney directly. Its influence in causing arteriosclerosis makes it prominent in the related type of nephritis, but the other forms are rarely directly produced by it. Gout is said to be a common cause of chronic nephritis, and English physicians put special stress on it as a cause of chronic interstitial nephritis.

Cardiovascular Changes

Dr. B. C. Frazier, Louisville: Often cardiovascular changes are not observed for a long time after the onset of persistent albuminuria. It is of special importance in cases of chronic or even acute albuminuria to look for vascular changes, especially in the middle-aged and elderly, and noting the blood pressure. From a diagnostic point, cardiovascular changes in nephritis are of as much importance as the study of the urine. It is very difficult, especially in the late stages of chronic interstitial nephritis, to decide whether it is primarily a heart or a kidney case. Increase of heart size varies. At first there may be only enlargement of the left ventricle mainly with apex displacement downward and to the left. Later, there is often enlargement of the right ventricle, with the apex impulse diffused and heaving. In more advanced cases, a presystolic murmur is often present. The peripheral vessels are hard and tortuous. A tortuous and plainly visible temporal artery is good evidence of underlying renal disease.

Many of the phenomena of chronic interstitial nephritis are explained by uremia. These toxic symptoms may be mild and of long standing, or they may be of sudden onset, the severe headache and convulsion coming without warning, frequently followed by fatal coma, an acute uremia. Inspection is frequently all that is needed to make one suspect malignancy or a chronic and rapidly developing nephritis with vascular changes.

Symptom Complex

Dr. R. Hayes Davis, Louisville: In the early part of the disease the only changes noted are an increase in blood pressure and hypertrophy of the heart, involving only the left ventricle at first. The extent of these changes is variable. The blood pressure may be nearly normal or only slightly elevated or it may be quite high, and the heart shows hypertrophy varying from only a slight enlargement with an increase of the first sound and a slight accentuation of the aortic sound to an actual ox-heart. As the disease advances these changes gradually become more marked, and if the patient is destined to progress along the cardiac route, he will sooner or later develop the symptoms of dilatation which occur as a result of an overworked heart muscle degenerated on account of coronary sclerosis and fatigued from its efforts to force the blood through inelastic arteries against a high blood pressure, or handicapped by diseased valves. The symptoms of dilatation progress from slight irregularities, and dyspnea on exertion with dizziness and digestive disturbances, etc., to the extreme forms of cardiac failure with marked dyspnea, weak heart, edema, and all the other distressing symptoms. Uremia may manifest itself as a chronic form of intoxication or as an acute overwhelming toxemia. The so-called chronic forms of uremia are most common. Perhaps, the most frequent symptom is headache. This may be slight or very intense, in some cases resembling migrain. Chronic headaches beginning in individuals past middle life, or migrain attacks that grow worse instead of better, should be looked on with suspicion. Digestive disturbances are frequent. Vomiting may be typically centric in origin and may resemble the vomiting of brain tumor. Various forms of transient paralyses often occur, involving the face, the tongue or one or more extremities. They are usually of very short duration.

Laboratory Findings and Their Value

Dr. C. W. Dowden, Louisville: Fluid retention (persistent), with nocturia and fixation of specific gravity offers the simplest and most trustworthy evidence of potential nephritis and its correction will prevent actual disease. Nephritis is manifested further by (a) an increase in the constant Ambard or the index of McLean; (b) retention of nitrogenous products in the blood, first of uric acid, second of urea, and third of creatinin, as the process progresses; (c) a low excretion of phenolsulphonephthalein, generally, or excretion above 80 per cent. with other evidences; (d) hypertension, in the interstitial type particularly until the myocardium fails. Diagnosis is possible in 100 per cent. of cases if all these methods are employed. Prognosis of death in two months is possible in 100 per cent. of cases with creatinin retention of 5 mg. or more per hundred c.c. of blood.

Cardiovascular Changes; Medical Management

Dr. J. A. Flexner, Louisville: The origin of the vascular, cardiac and renal changes which mark the earliest stages of this condition lies in some infectious process, either acute or chronic. The kidneys are the great emunctory organs for the chemicotoxic products which result from the bacterial destruction of tissues as the result of infectious processes; there is scarcely an infection of any severity which does not have an albuminuria and other evidences of destructive processes in the kidney accompanying it. These toxic substances are carried to these organs by the blood stream, hence we can understand the damage done to the vessels, and especially the renal vessels by reason of the concentration of the poisons in the kidney. In the management of these cases elimination of infectious processes is the first step in treatment. Conserve the reserves of function left in these organs, so that no organ will be overstrained or given a load to carry for which it has been rendered unfit. By living well within their physiologic resources many of these patients may have long and useful lives.

DISCUSSION ON SYMPOSIUM ON NEPHRITIS

Dr. Frank W. Fleischaker, Louisville: Physicians speak of chronic parenchymatous nephritis and chronic interstitial nephritis, but the pathologist says we are dealing with a large, white kidney, or a secondarily contracted kidney, or with a gouty kidney or an arteriosclerotic kidney, or a senile kidney. But that makes little difference if we know what we mean by chronic interstitial nephritis in contradistinction to chronic parenchymatous nephritis. That is all that is necessary. We understand the production of it. When we think of chronic interstitial nephritis we at the same time think of cardiac changes. It is not of much moment whether the pathology of the heart or the pathology of the kidney is primary. They seem to go hand in hand and physicians speak of these cases as cardiorenal.

As to the prognosis and treatment, it does not make much difference whether one or the other originated first; we take the symptoms as they come for the treatment.

Dr. C. I. Sherman, Millwood: Suppose the specific gravity of a certain urine is 1.010; we examine the urine again and find it still 1.010, and so on for a number of times. Then, suppose we increase the proteids and decrease the liquids but the specific gravity still remains 1.010. That kidney may be able to excrete a certain amount of urine if you take away the liquids and increase the solids. I think that is what the essayist means by a fixed specific gravity. That is one of the early symptoms. We all ought to employ the phenolsulphonephthalein test.

Dr. John R. Morrison, Louisville: We know that infectious diseases are often the foundation for nephritis. We should also consider focal infection that comes from the teeth, the tonsils, the sinuses and the prostate. The prostate is often overlooked. It may be the source of infection and the cause of back pressure on the kidneys. In such cases, when the back pressure on the kidneys has been relieved, the symptoms of chronic interstitial nephritis often clear up.

Dr. C. W. Dowden: Dr. Sherman misunderstood me in regard to the question of fluid retention being one of the early signs of nephritis. As a matter of fact, in interstitial nephritis or compensated nephritis, the output of fluid is in excess of the intake because, owing to lack of concentrative power, nature calls on the kidney for a greater output to make up the deficiency. In the later stages of interstitial nephritis and nephritis, when the burden of the kidney is transferred to the heart and myocardium, parenchymatous nephritis and retention of all nitrogenous products appear. This means myocardial failure. Low specific gravity means that the kidney is doing its work all right in interstitial nephritis, but fixation of a high specific gravity means a congested kidney, or in the later stages when the myocardium fails it is of doubtful significance.

Focal Infection from a Dental Standpoint

Dr. Raymond Grant, Louisville: I cannot condemn too emphatically the practice of physicians who advise patients to have all their teeth removed, simply because it is recognized that some of them may have to be sacrificed. Where there is a focus of infection in any of the anterior teeth, it is possible to effect a cure in a great majority of instances either by the therapeutic action of drugs or by surgical procedures.

Hyperthyroidism: A Clinical Study

Dr. W. F. Boggess, Louisville: Close watching and careful analysis of a large number of persistent tachycardias, without any perceptible increase in the size of the thyroid gland, but with persistent disturbances of metabolism, loss of strength, increased nervousness, will unearth a large number of unsuspected atypical hyperthyroideas with the cardiovascular symptoms remaining in the ascendency. The treatment of the thyrotoxicosis is not the treatment of the heart or any one distressing symptom, but the treatment of the condition in its entirety. Find the focal infection, if it exists, and remove it.

After thorough study and diagnosis of these atypical cases, the results of medical treatment are very favorable. From 70 to 90 per cent. of the patients can be relieved and cured. I do not desire to minimize in the slightest, the wonderful results of surgery, and the necessity of surgery in many cases of exophthalmic goiter, but I do want to emphasize the fact that these cases should be recognized early, and that proper treatment should be instituted early, and the patients prevented from coming to the surgical stage. Do not postpone surgical intervention until the general musculature, as well as the cardiac muscle, has been degenerated to such a point that even surgery fails.

Uterine Prolapse with Cystocele

Dr. John R. Wathen, Louisville: The Watkins operation of interposition of the bladder, consists of placing the bladder so that it rests on the posterior surface of the uterus, and the uterus is fixed to the anterior vaginal wall, acting as a buffer against any descent of the bladder. The uterus is fixed in a position from which it can never retrovert or markedly descend or prolapse; for retroversion is the first step in the development of a marked ptosis or prolapse of the uterus. The best results from this operation are obtained in cases where there is a firm uterus of average size. The brilliant results obtained from this operation cause me to feel that the general practitioners and the surgeon should have a better appreciation of its possibilities and merits.

DISCUSSION

Dr. W. Barrow, Lexington: I have had experience with this operation in over forty cases, twenty-three of which were my own, and of that twenty-three there was a cure effected in twenty-one. In one of the cases I operated a second time and found tuberculous peritonitis. I suppose that is the reason why the uterus did not hold. There are two or three things about the operation that are important. First, complete separation of the bladder. If you separate the bladder incompletely you will have little pockets that are adherent to the uterus when you attempt to operate through the abdomen, and these will cause a marked cystitis which it is difficult to cure. It is necessary to curet the uterus. These uteri are usually large and subinvoluted, practically always retroverted, and curettement stimulates the return of the uterus to the natural size. I think it is also necessary to amputate the cervix even though it is short.

Hemorrhage in the Common Nose and Throat Operations

Dr. S. G. Dabney, Louisville: The fear of hemorrhage need very rarely deter us from operating about the nose and throat. In plethoric adults, especially those of short neck and heavy build, it is well to give the chlorid or lactate of calcium a few days before operating. If this is not practicable, a half grain of emetin given hypodermically or pituitary extract may be administered just before the operation. In all cases it is wise to see that the patient is free from any recent acute inflammation, is in good condition and that the bowels are open. To obtain the full effect of epinephrin and cocain in the nose, a pledget of cotton soaked in these solutions should be left in situ for from half an hour to an hour. Nasal plugging is undesirable, and except for temporary purposes while operating under general anesthesia, it is not often necessary. When plugging is done, the packs, and especially the posterior ones, should never be left in place more than twenty-four hours. Of the internal measures to control nose and throat hemorrhage, morphin and atropin are among the most valuable drugs. If a spurting vessel is seen after a tonsil operation, it should be caught in the artery forceps, and, if necessary, torsion practiced. Ligation is rarely called for. If the hemorrhage comes from persistent oozing, as observed after retracting the anterior pillar and carefully examining the fossa, pressure either with the gauze on the forefinger or by means of a sponge, will usually arrest it. A hot sponge may be more valuable and especially one dipped in a hot solution of calcium chlorid or a 5 per cent. solution of gelatin in normal saline. If the hemorrhage is severe, sewing the anterior and posterior pillars together, possibly with a little piece of gauze between them, may be called for. Postoperative hemorrhage is often manifested by the vomiting of blood. When the blood appears fresh and red it would indicate that the bleeding is still going on, but it is well to remember that vomited blood seems far more than it is and the pallor and exhaustion may be due to nausea. In rare instances, it may be necessary to return the patient to the operating room and under general anesthesia search for the bleeding spot and use some of the surgical procedures mentioned, giving at the same time, if very urgent, a subcutaneous injection of epinephrin in normal saline and remembering that cases are reported where ligation of the carotid has been called for.

DISCUSSION

Dr. W. B. McClure, Lexington: No operation should be done on the throat following an acute inflammation of this region. The only fatality I have any knowledge of followed a tonsillectomy in which there was an acute inflammation of the tonsils. These hemorrhages are frequently due to the fact that in the operation we wound the pillars and thus produced a bleeding surface. In my own experience in tonsillar work I have never yet had to return a patient to the operating room for a second anesthesia, and I have rarely met with cases in which the bleeding was not controlled by pressure.

Dr. J. G. Carpenter, Stanford: These hemorrhages generally occur in the hyperplastic tonsil, unless the patient is a bleeder. By compression with forceps and a little torsion or ligation you can control the hemorrhage. In addition to tannic acid and gallic acid, you will find antipyrin, 15 grains to the ounce, a wonderful local hemostatic in tonsillar, throat and nasal surgery.

Dr. M. F. Coombs, Louisville: No menstruating woman should be operated on; we should wait until the period is over, at least ten days, before operating. A most excellent hemostatic is hot alum water.

Dr. Cowley, Berea: Local anesthesia for tonsil work has taken away almost all the terrors of hemorrhage for me. I have not had a case of hemorrhage since I have used local anesthesia, and I have done two operations on children 7 years of age under local anesthesia. A local anesthetic gives one a chance to see what he is doing.

Traumatic Injuries of the Chest

Dr. W. L. Gambill, Jenkins: The treatment is expectant unless infection, hemorrhage or respiratory embarrassment threaten life. The patient should be placed in a position of greatest comfort and ease of respiration. Shock should be treated by heat, stimulants, pituitary extract, epinephrin and, if severe, by intravenous salines or hypodermoclysis. In case of injury to the pleura or lung, adhesive plaster strapping affords marked relief. Aspiration may be necessary in pneumothorax or hemothorax if respiration is seriously embarrassed. Should empyema develop, thoracotomy and drainage must be instituted.

Aside from contusions, wounds of the chest may be of all types, and are inflicted by blunt objects, machinery accidents, explosions, knives, bullets, glass, spikes, nails, swordlike pieces of timber in saw mill accidents, and the bits of mine machines. Nonpenetrating wounds are not particularly grave. Hemorrhage is generally slight unless an intercostal, the internal mammary or a branch from the axilla is severed. Of course, they, as other wounds of the body, are subject to the dangers of infection. Muscles may be severed and nerves, especially the anterior and posterior thoracic, causing a paralysis of serratus and pectoral muscles. These should be sutured immediately.

The treatment is the same as in wounds of other parts of the body, control of hemorrhage, disinfection by iodin, removal of foreign bodies, sutures, if necessary, and drainage. Penetrating wounds of the chest may be of the most varying character, from the slightest perforation to the most severe lacerations by machinery. Their gravity depends on, first, the amount of hemorrhage, and, second, on the amount of air and especially of any foreign or septic material introduced. Penetrating injury of the heart demanding surgical treatment is most often the result of stab wounds.

Drainage in Surgery of the Chest

DR. GEORGE A. HENDON, Louisville: The means adopted for the accomplishment of drainage in a general way are careful hemostasis, accurate approximation and perfect asepsis. When these three objects are arranged the necessity for drainage no longer exists. They may be accomplished, first, by careful ligation of blood vessels; second, obliteration of dead spaces with the use of buried sutures and surgical cleanliness in the superlative degree. The first of these requirements is the easiest, the third is possible if contamination has not preceded the surgeon. The second (the obliteration of dead space) is the only one of the three which seems at the present time to be beyond the range of surgical possibility and occupies the most important consideration in chest surgery. To avoid the necessity of using a foreign body for the drainage of a space that cannot be obliterated the following measures may be adopted: Occupying the space by a medium in which micro-organisms will not grow, therefore eliminating the necessity of drainage.

Wounds and Injuries of the Rectum and Anorectal Region

DR. BERNARD ASMAN, Louisville: The clinical manifestations induced by anorectal wounds and injuries vary according to the instrument which inflicted the trauma, the extent of the damage to the tissues, the anatomic situation involved, the time which has elapsed between infliction of the injury and observation of the patient, and also the nature of the wound, i. e., whether contused, lacerated or perforating in character. The higher lesions are the most serious because of the likelihood of pelvic and abdominal complication. Contusions and lacerations are attended by less clinical danger than perforating and punctured wounds; the former are more likely to be superficial than the latter and adequate drainage can be more readily secured. The most dangerous type of injury is rectal or colonic rupture which permits the escape of blood, gas feces and pathogenic micro-organisms into the pelvic or abdominal cavity, the most logical result being the supervention of infection with the production of peritonitis, abscess, or fecal fistula. Even superficial wounds may result disastrously provided drainage is inadequate and infection with tissue sloughing ensues. However, if surgical treatment be instituted promptly and rigid asepsis maintained infection of clean wounds should not occur.

Where the surgeon has reason for believing the injury extends to the upper rectal segment, the sigmoid or colon, immediate celiotomy is indicated as a diagnostic measure, and at the same time to permit the necessary reparative procedures. The extent of the damage inflicted on the lower rectal segment and the anal canal may be easily determined by ocular inspection.

The treatment of anorectal wounds and injuries is primarily and essentially surgical, and the technic of reparative measures must be modified to meet the indications in each individual instance. The operative steps necessary will depend on the location, nature and extent of the damage inflicted.

Current Medical Literature

AMERICAN

Titles marked with an asterisk (*) are abstracted below.

American Journal of Orthopedic Surgery, Boston

August, 1918, **16**, No. 8

1 *System of Orthopedic Instruction. R. W. Lovett, Boston.—p. 483.
2 School of Clinical Military Orthopedic Surgery, Camp Greenleaf, Fort Oglethorpe, Ga. E. S. Geist, Fort Oglethorpe, Ga.—p. 488.
3 Treatment of Fracture of Neck of Femur. F. H. Albee, New York.—p. 493.
4 *Pathology of Peripheral Nerves in Gunshot Wounds. S. M. Cone. —p. 509.
5 *Primary and Delayed Primary Suture in Treatment of War Fractures. W. S. Baer.—p. 513.
6 Foot Problems and Treatment with Unseasoned Troops. C. B. Francisco.—p. 520.
7 Case of Congenital Anterior Subluxation of Tibia. L. Mayer, New York.—p. 521.
8 *Foot Prophylaxis in Soldier. J. T. Rugh.—p. 529.

1. System of Orthopedic Instruction.—The scheme Lovett presents can best be summarized by a concrete instance. The deformities of rickets can be taught in one of two ways: one is to describe knock-knee, its cause, mechanical production and treatment, and then do the same for bow legs and coxa vara, which is a good way and the usual one. The other way is to teach about bone, its growth and ossification, to tell of bone disturbances, the most frequent of which is a certain disturbance of ossification called rickets; that this process causes softening, and that bending thus occurs according to the mechanical influences in the case, perhaps in one direction, perhaps in another; that there may be an inward, outward or forward deformity of the leg; that ossification must be brought to normal by diet and hygiene; do not operate until this has happened. Meanwhile, treat by braces or manipulation. Thus one links up rickets with other disturbances of ossification, achondroplasia and the like. In the latter method Lovett believes that the man will have received more education than in the former.

4. Pathology of Peripheral Nerves in Gunshot Wounds.—Cone examined specimens from about 200 cases of war injuries of peripheral nerves. The patients were soldiers who, having had serious wounds by shell or bullet, in which soft parts and bone, as well as nerves, were torn or cut, came for repair of the nerves months after the original injury. The original wound had generally healed, yet it was considered advisable to wait until the lapse of six months after the injury before operating on the nerve; a few of the patients were brought to the operating table earlier, but many were not operated on for a year or more after injury. Many of the old healed sinuses suffer serious infection if operated on before the lapse of six months. In a few cases examination of material from the depths of the old wound shows masses of small round cells with few bacteria; some grow staphylococci on culture; others are negative. Many of the nerve trunks examined present masses of small round cells among the fibers; a few contain polymorphonuclear leukocytes. The vascularity is invariably greatly increased, new capillary vessels and full grown arteries and veins being found in all cases throughout the specimens. The fibrous scar between the nerve ends contains young nerves in 90 per cent. of cases. The increase of connective tissue is seen along the fibers some distance from the point of severance. Mixed with it is a proliferation of young nerves intertwining with capillary vessels among the old nerve fibers. This neuritis Weir Mitchell and Tinel say is often due to hemorrhage into the nerve.

Cone has never failed to find nerves in painful scars. The peripheral portion of a severed nerve contains axis cylinders in 86 per cent. of observations. The new connective tissue within, between and around injured nerves is most commonly wavy and vascular, often cellular, seldom dense. Nerve tendrils grow about foreign bodies such as khaki, hair and sutures. They grow well in granulation tissue. Fat is a better medium for nerve growth than is muscle. Nerves grow into fascia lata when used as a covering. Cargile membrane is impervious to nerve growth. A stretched nerve shows active growth of young tendrils. Circular constricting scars are particularly damaging. Young nerves grow wildly, most prolifically, and are hard to keep from growing. Pain may be caused by this great proliferation.

5. **Primary Suture in Treatment of War Fractures.**—Baer says that the primary suture is the method of selection in the treatment of these cases when this can be done. Experience has shown that primary suture may be performed successfully in 80 to 90 per cent. of the cases. In certain cases primary suture cannot be done, owing to the inability to make a closure due to the destruction of large amounts of tissue, including skin. But even here the primary suture at times may be accomplished by the aid of a skin flap. Technic of primary suture: Disinfection of skin with iodin, soap, water and a scrubbing, or other methods. Removal of skin edge, together with the tract made by the projectile. Removal of all projectiles and of all devitalized tissue. The securing of complete hemostasis. The accurate approximation of skin edge without tension. The time limit for primary suture is generally regarded as being within the first twelve hours, but in face cases the time limit for successful primary suture is slightly increased.

Ten per cent. of battle casualties, even when they have arrived at the hospital within the first twelve hours, cannot be closed primarily, and mainly for the following reasons: Cases in which the shock is so great that the patients cannot stand the operation within the first twelve hours; deep wounds, where the complete excision of all devitalized tissue is uncertain or impossible: wounds wherein no roentgenogram being present, the projectile cannot be extracted; wounds where the loss of substance is so great that complete closure is impossible, etc. Of the primary sutures, 5 to 10 per cent. are not successful, and this is due mainly to streptococcus.

In an evacuation hospital, all wounds which are received within the proper time after injury, and which are applicable to primary suture, are closed by this method. At the same time, cultures of the wounds are taken. The wounds that must be opened immediately on the bacteriologic report are those primarily infected with the virulent types of streptococci. A bacteriologic report of other organisms does not in the main disturb the surgeon. Mechanical sterilization by the operative procedure of primary suture, together with the action of the human tissue, takes care of all other organisms, particularly when in pure culture. The virulent streptococci, generally by themselves, and always when associated with other organisms, such as streptococcus, enterococcus, the gas gangrene group, etc., demand immediate opening of the primary suture. The delayed primary suture is the method of wound closure which has been adopted in all those cases in which primary suture would have been done except for circumstances, generally of military character, which made it inadvisable.

The technic of delayed primary suture is exactly that of primary suture, except that the skin is not closed, and a dry, sterile dressing is placed over the wound. The skin edge is brought together from three to eleven days later.

All primary sutures should be kept at the place of operation for at least ten days, so that the wound may be watched and not subjected to the traumatism in transportation. Therefore, where patients must be removed immediately, within six or seven hours after operation, delayed primary suture takes the place of primary suture. This method of procedure has been found eminently successful. The delayed primary sutures are sent to the rear within six or seven hours after the initial operation, and are closed preferably on the second, third or fourth day. The percentage of cures in delayed primary sutures is between 80 and 87 per cent. This method allows the beds at the front to be continuously utilized, and adds to the rapidity of recovery over the former methods. Baer urges the necessity for the early treatment of bone injuries, by primary or delayed primary suture, as this is the keynote to the successful handling of war fractures.

8. **Foot Prophylaxis in Soldier.**—Rugh states that if a careful foot examination were made by a competent orthopedic surgeon, when the soldier is first inducted into service and proper remedial measures outlined and instituted for such conditions, fully 90 per cent. of the foot inefficients could be eliminated. This plan, however, has not been feasible thus far. Four factors stand out in the solution of the problem of foot prophylaxis, each of them capable of thwarting all efforts and of preventing success. These four factors, in order of their importance are: (*a*) the feet, (*b*) the shoes, (*c*) the officers, and (*d*) the soldiers—though experience shows that they are of almost equal significance. (*a*) The feet present all types and conditions. (*b*) The shoe question has been solved by Colonel Munson, as 98 per cent. of the men's feet can be satisfactorily fitted with this shoe. (*c*) The officers in charge of the men are held responsible for the proper fitting of the shoes, instruction of the men in care of the feet, etc. (*d*) The man is the fourth factor in foot prophylaxis. His pride in his foot dress not infrequently makes him unwilling to wear the regulation shoe, and especially when a sufficiently large shoe is fitted to him. Again, whether he is an enlisted or drafted man influences very much his feeling toward possible foot disability. The one serves voluntarily in most cases, and the other involuntarily, and there very readily develops in the latter a mental state which exaggerates a slight ache or pain into an absolutely disabling condition.

From the orthopedic standpoint, the prophylactic measures that have proved most potent in foot prophylaxis are four: 1. The detection of the potentially weak cases. 2. One of the most important measures is the restoration of the balance to the foot by proper alteration of the shoe. 3. After training follows in the problem of reclamation, and the first essential is that of proper walking and standing. 4. Exercises for the restoration of muscle power are the follow-up for protection and corrective work in foot cases. Other prophylactic methods are to be used as they may be indicated and whenever opportunity offers, but after shoes have been properly fitted and altered, the above are probably the most important ones to use. First problem: Inspection of the feet of the new recruit should be accomplished in the casual detachment or the depot brigade, where he is first quartered on entering service. Second problem: When the recruit is transferred to a National Guard or Regular Army camp, he may be sent directly to his organization or to quarantine barracks. If to the latter, the feet should be inspected and proper remedial correction made before he reaches his final station, and proper entry of this correction should be made on his records, so that future change in shoes may also receive the same attention. Third problem: Intensive inspections, if done in a regiment, are always arranged for through the regimental surgeon, and through him with the regimental commander. There is practically no trouble in obtaining this if its purpose is explained to the colonel and major. Great care should also be used to interfere as little as possible with the ordinary work of the organization, and a regular schedule for the inspection should be made out and followed closely. After a little practice one can inspect from 150 to 175 men in an hour. Fourth problem: The installation of cobbling and alteration outfits. Fifth problem: The securing of cobblers for work in the camp repair shop. The most satisfactory results obtain from asking assignment of several men (preferably cobblers or shoemakers) from an organization for temporary duty in the camp shoe repair shop, and then to arrange for their instruction in shoe repair and alteration work. After six to eight weeks of work, they should be returned to their organization and several sent from other units to take their place for similar instruction. During this time these men have been working efficiently in the shop, have learned the trade for practical purposes, and are still a part of their original organization, and are available for cobbling work in overseas service. Commanders will allow temporary assignment but not transfer, and when the economic phase is placed before the commanding general or chief of staff, they readily cooperate. Sixth problem: The care of cases of foot disability should rest with the regimental surgeon. Seventh problem: Experience in camp work quickly shows the orthopedic surgeon that he must work out his own problems and allow others to do the same.

Boston Medical and Surgical Journal

Sept. 5, 1918, **179**, No. 10

9 *Diagnosis of Fracture of Hip. G. W. Gay, Boston.—p. 315.
10 Obstruction of Small Intestine. J. T. Bottomley, Boston.—p. 316.
11 Is It Worth While for Man of Fifty to Get Into Physical Condition? J. M. Taylor, Philadelphia.—p. 324.
12 The Prostatic—How Shall He Be Managed? F. B. Sweet, Springfield.—p. 332.
13 Radical Cure of Hernia under Local Anesthesia; Combined with Scopolamin and Morphin. J. H. Cunningham, Jr., Boston.—p. 336.

9. **Diagnosis of Fracture of Hip.**—Given these three symptoms—disability, eversion of foot and pain on manipulation—Gay says, that the diagnosis is reasonably certain in all injuries to the hip. The older the victims, the more reliance can be placed on them. Shortening of the injured limb is almost always present, but it is less readily determined than are the above mentioned cardinal symptoms. Slight shortening, that is, not exceeding half an inch, is not always detected, especially in stout persons. In some cases only an expert can detect any difference in the length of the limbs. While unmistakable shortening is a valuable symptom of fracture of the hip, yet it is not as readily detected as are other conditions. Crepitus is usually absent in impacted fractures, depending of course, on the degree of impaction. This symptom is not to be sought too curiously. The manipulations should be gentle and intelligent. The diagnosis can be made satisfactorily without this symptom. Other comparative symptoms of hip fractures are Nélaton's and Bryant's lines, designed to show the relative elevations of the top of the great trochanters on the two sides. The comparative tension of the fascia lata above the trochanters is also a sign of some significance. The only dislocation of the hip that presents the same, or a similar clinical picture as a fracture, is the displacement forward. This dislocation is so extremely uncommon that most physicians have never seen a case. The most common errors in diagnosis in hip injuries are in calling them sprains and contusions.

California State Journal of Medicine, San Francisco

September, 1918, **16**, No. 9

14 Children's Year—Opportunity in Preventive Medicine. A. Brown, San Francisco.—p. 414.
15 Plastic Surgery of Nose and Ears. G. Selfridge, San Francisco.—p. 416.
16 Social Problems of War. H. G. Irvine and W. M. Dickie, San Francisco.—p. 423.
17 Analysis of First Two Hundred Cases Studied at San Diego Diagnostic Group Clinic. B. J. O'Neill and R. Pollock, San Diego.—p. 428.
18 Intestinal Obstruction. H. Shoemaker, Los Angeles.—p. 430.
19 Clinical Aspects of Fasting Treatment of Diabetes. A. H. Rowe, Oakland.—p. 433.

Canadian Medical Association Journal, Toronto

September, 1918, **8**, No. 9

20 Combined Inquiry into Presence of Diphtheria and Diphtheroid Bacilli in Open Wounds. J. G. Adami, and others.—p. 769.
21 Cancer Problem. C. H. Mayo, Rochester, Minn.—p. 786.
22 Sociologic and Economic Aspects of Tuberculosis. J. S. Wright, Edmonton, Alberta.—p. 791.
23 Returned Soldier. W. T. Connell, Kingston.—p. 797.
24 Treatment of Infected Wounds with Dichloramin-T with Special Reference to Its Advantages over Carrel-Dakin Method. H. W. Baker, Toronto.—p. 805.
25 Cerebrospinal Syphilis. G. S. Mundie and R. J. Erickson, Montreal.—p. 824.

Journal of Parasitology, Urbana, Ill.

June, 1918, **4**, No. 4

26 Experiments on Extrusion of Polar Filaments of Cnidosporidian Spores. R. Kudo, New York.—p. 141.
27 Two New Cystocercous Cercariae from North America. E. C. Faust, Urbana.—p. 148.
28 Tick as Possible Agent in Collocation of Eggs of Dermatobia Hominis. L. H. Dunn, Ancon, C. Z.—p. 154.
29 New Gregarines from Coleoptera. M. W. Kamm, Urbana.—p. 159.
30 Centrorhynchus Pinguis N. Sp. from China. H. J. Van Cleave.—p. 164.
31 Cultivation of Trichomonas Intestinalis. M. F. Boyd, Galveston, Texas.—p. 168.
32 Adaptability of Schistosome Larvae to New Hosts. W. W. Cort, San Francisco.—p. 171.
33 Parasitism of Carboniferous Crinoids. R. L. Moodie, Chicago.—p. 174.

Medical Record, New York

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34 Superior Longitudinal Sinus in Infants; Its Value in Transfusion and for Rapid Medication. L. Fischer, New York.—p. 399.
35 Patent Foramen Ovale and Its Relation to Certain Cardiac Murmurs. W. F. R. Phillips, Charleston, S. C.—p. 402.
36 Significance of Early Lesions. J. L. Heffron, Syracuse.—p. 404.
37 *Fifty Cases of Tuberculosis, Mainly Osseous and Glandular, Treated with Tuberculin, Contrasted with Fifty Cases Treated without Tuberculin. R. C. Newton, and S. A. Twinch, Newark, N. J.—p. 407.
38 Drug Treatment of Nervous Exhaustion. B. Robinson, New York.—p. 410.
39 Relating to Factors That May Cause Rheumatic Conditions. J. M. W. Kitchen, East Orange, N. J.—p. 411.
40 Apothesin and Epinephrin Anesthesia in Removal of Tonsils. J. Coleman, New York.—p. 413.

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41 Blood Cholesterol. A. J. P. Pacini, New York.—p. 441.
42 Neurons; Their Relation to Therapeutics, Medical and Mechanical. D. Graham, Boston.—p. 447.
43 Value of Wassermann Reaction. R. A. Lambert, M. P. Olmstead and H. C. Stuart, New York.—p. 452.
44 Gastro-Intestinal Headaches. J. R. Verbrycke, Jr., Washington, D. C.—p. 454.
45 Retropharyngeal Abscess in Infants. A. N. Schiller, New York.—p. 457.

37. **Tuberculosis, Osseous and Glandular, Treated with Tuberculin, Contrasted with Cases Treated Without Tuberculin.**—With a few exceptions these patients were children, inmates of a home for crippled children and patients in a hospital clinic. Without tuberculin 16 recovered, or 32 per cent.; 25 died, or 50 per cent.; 9 are still wearing braces and under treatment, or 18 per cent. With tuberculin 33 recovered, or 66 per cent.; 5 much improved, or 10 per cent.; 6 died, or 12 per cent.; 5 still under treatment, or 10 per cent.; 1 discontinued treatment, or 2 per cent. Of the 16 cured without tuberculin the average period treatment for each case was five and a fourth years. Of the 33 cures with tuberculin the average period of treatment for each case was eleven and a half months. Of the 25 deaths without tuberculin the whole period of treatment was seventy-two years, eleven months, nine days, or three years, fourteen days for each patient. Of the 6 deaths of those treated with tuberculin the total period of treatment was four years, nine months, and twenty-nine days, or an average of nine months, thirteen days for each patient. Of those treated without tuberculin, 9 are still under treatment. Of those treated with tuberculin 5 are still under treatment.

Mental Hygiene, Concord, N. H.

July, 1918, **2**, No. 3

46 *Care and Disposition of Military Insane. P. Bailey.—p. 345.
47 Survey of War Neuropsychiatry. C. S. Read.—p. 359.
48 Mental Hygiene and Social Work; Course in Social Psychiatry for Social Workers. E. E. Southard, Boston.—p. 388.
49 *Mental Disease in Field. M. A. Harrington.—p. 407.
50 Community Responsibilities in Treatment of Mental Disorders. W. L. Russell, White Plains, N. Y.—p. 416.
51 Organization of State Hospital for Mental Disease. H. D. Singer.—p. 426.
52 Supervision of Feebleminded in Community. J. Taft, New York.—p. 434.
53 Next Step in Treatment of Girl and Women Offenders. J. D. Hodder, Framingham, Mass.—p. 443.
54 Character as Integral Mentality Function. G. G. Fernald.—p. 448.

46. **Care of Military Insane.**—Does Army life make men insane? The question is especially important in a warfare which involves the whole nation as bearing on the economic value of psychiatric examinations. Bailey says that so far as epilepsy and mental deficiency are concerned, the present statistics do not throw much light. While camp conditions might easily, and as a matter of fact often do, give rise to nervous episodes in the mentally deficient, they have nothing to do with the underlying cause. The same may be said of epilepsy. The frequency of attacks in epileptics may be increased after entering the Army, but figures so far obtained do not justify the assumption that a potential epileptic under peace conditions is converted into an actual one by Army life. But the matter is quite different with the psychoneuroses, constitutional psychopathic states and dementia praecox. It seems that even in the training camps any of these conditions may become active and conspicuous through the requirements of military service when they had not manifested themselves

to a degree to be incapacitating in civil life. It is not believed that this conversion of a potential psychosis into an actual one in the camps is a result of hardship or physical causes. It is believed rather to be a psychologic result from disharmony with new and rigid conditions which the neurotic, who is so intensely individualistic, finds it impossible to adapt himself to and so breaks down. This explanation holds true for those who have volunteered quite as much as for those who have been drafted.

So far as the expeditionary forces are concerned, the time has not yet come to explain the method of production of psychoses. Most of the wounded so far returned had departed for France before the neuropsychiatric examinations had been established. Among them there is a percentage of nervous and mental disease of twenty-five, a percentage that seems destined to decrease as the figures more and more concern the examined Army. Experience indicates that a pronounced psychopathic constitution and military service are antagonistic. It is believed, on the other hand, that psychoneurotics who might render excellent service in their civil capacity, become incapacitated by the change in their habits of living however patriotically they may have sought it. It is also believed that the Army fares better without them.

49. **Mental Disease in the Field.**—Harrington was regimental officer with the British Expeditionary Force in France for a year, he had an opportunity to see a fairly large number of mental and nervous cases; and although, unlike physicians serving in base hospitals, he had no opportunity to make a careful study of his cases, he had a better opportunity to observe the conditions under which they developed and the practical problems which they presented to the military organization. Harrington is convinced that in the cases resulting from war strain there is little if anything that is really new. Emotional shock, fatigue, etc., the various etiologic factors which give rise to war psychoses, are all found operating in civil life; and as for the psychoses themselves, there is probably nothing in their symptomatology that cannot be duplicated in the ordinary psychiatric clinic of any large city. The difference between peace conditions and war conditions and the mental disturbances resulting from each, is not a qualitative difference, but a quantitative one. Under peace conditions, for example, men are subjected to emotional shocks in no way essentially different from those produced by shell fire. But under peace conditions these shocks are of rather rare occurrence, and as a rule so mild as to affect only those who are mentally unstable. Under war conditions, however, they are of constant occurrence, and frequently so severe as to affect the strongest and best balanced of men. Thus etiologic factors and types of mental disorder to which formerly little attention was given have, with the altered conditions produced by the war suddenly forced attention; and as a result there has been a tendency to treat of them as if they were something altogether new.

Michigan State Medical Society Journal, Grand Rapids

September, 1918, **17**, No. 9

55 Acute Abdomen. F. G. Connell, Oshkosh, Wis.—p. 349.
56 Group Medicine—Development of Private Pay Clinic. A. W. Blain, Detroit.—p. 354.
57 Case of Lipodystrophia Progressiva. B. N. Epler, Kalamazoo.—p. 356.
58 Report of Case of Situs Inversus. W. O. Upson, Battle Creek.—p. 362.
59 Cardiac Conditions That Do Not Disqualify for Army Service. C. H. Johnston, Grand Rapids.—p. 363.
60 Dental Anomalies. C. J. Lyons, Ann Arbor.—p. 370.
61 Lymphatic Disease in Children. H. deB. Barss, Ann Arbor.—p. 374.

Missouri State Medical Association Journal, St. Louis

September, 1918, **15**, No. 9

62 *Can We Disregard Calendar in Setting the Date for Labor? F. T. Van Eman, Kansas City.—p. 315.
63 Prevention of Deformities in Time of Peace and War. B. Belove, Kansas City.—p. 317.
64 Treatment of Vulvovaginitis in Children. E. C. Sage, St. Louis.—p. 319.
65 Chronic Progressive Chorea in Negro; Report of Case. F. M. Barnes, Jr., and E. Hein, St. Louis.—p. 324.

62. Abstracted in The Journal, June 15, 1918, p. 1889.

New York Medical Journal

Sept. 7, 1918, **108**, No. 10

66 Ovary: Corpus Luteum. O. T. Osborne, New Haven, Conn.—p. 401. To be continued.
67 Modern Treatment of Syphilis. P. Goldfader, New York.—p. 405.
68 Visceroptosis; Its Diagnostic Importance. I. R. Kuhn, Fallsburgh, and J. Glass, New York.—p. 409.
69 *New Dressing for Wounds. A. Kahn, New York.—p. 411.
70 Retropharyngeal Abscess; Report of Three Cases. J. J. Levbarg, New York.—p. 417.
71 Nasopharyngeal Polypi. A. E. Pohly, New York.—p. 418.
72 Mobilizing the Spas and Health Resorts of the Nation. N. P. Norman, Fort Leavenworth, Kan.—p. 419. To be continued.

Sept. 14, 1918, **108**, No. 11

73 Relative Value of Pasteurized and Certified Milk. S. S. Cohen, Philadelphia.—p. 445.
74 Ovary: Corpus Luteum. O. T. Osborne, New Haven, Conn.—p. 447.
75 Toxic Nonexophthalmic Goiter. E. H. Reede, Washington, D. C.—p. 452.
76 Papillary Cystadenoma of Ovary. J. Corcia, New York.—p. 457.
77 *Food Value of Candy. J. E. Leikauf, New York.—p. 458.
78 Painless Meatotomy. L. L. Michel, New York.—p. 461.
79 Two New French Methods for Staining Blood Films and Blood Parasites. L. Tribondeau, Corfu, France.—p. 461.
80 Mobilizing Spas and Health Resorts of the Nation. N. P. Norman, Fort Leavenworth, Kan.—p. 463. To be concluded.

69. **New Dressing for Wounds.**—The material used by Kahn for an internal dressing or drain and for an external absorptive dressing, either wet or dry, is blotting paper prepared in a variety of ways; and as an external binder to take the place of the cloth roll or bandage, punctured paper adhesive on one side for binding it over the dressing or wound. This adhesive roll last mentioned can be variously medicated and used over surfaces much as ordinary adhesive plaster or mustard plaster. The wound is prepared for dressing much as any wound is prepared, the difference being that instead of using gauze and cotton as a drain, Kahn uses blotting paper, corrugated, thin, and in strips, as a drain; and blotting paper crumpled up in the hand as an external dressing. The blotting paper may be reinforced with a little gauze, or with a cloth roll bandage over the blotting paper, or a binder of the corrugated, punctured, adhesive paper may be used. The paper dressing makes a light, airy and inexpensive dressing, it is easily removed, and is more readily destroyed than a cloth dressing.

77. **Food Value of Candy.**—Candy being composed principally of sugar, chocolate and nuts, is very high in food value, and the different kinds vary in the proportion of carbohydrates, fat and protein they contain. Sugar is highly concentrated food. Sugar is easily digested. On account of the rapidity with which it is assimilated, sugar quickly relieves fatigue. Six ounces of sugar are equal in food to 1 quart of milk, or 1¼ pounds of lean beef. It has a fuel value of 1,810 calories. Nuts are very high in food value, those used principally in manufacturing confectionery being almonds, filberts, pecans, peanuts and walnuts, averaging approximately 1,500 calories per pound. Corn syrup, erroneously called glucose, used largely in manufacturing gum drops, hard candies and taffies, is a pure wholesome transparent heavy syrup, manufactured from corn. The food value as expressed in scientific terms is 1,559 calories per pound.

Candy is composed of various raw materials of high food value; it is, therefore, apparent that candy being composed of combinations of two or more of these raw materials is exceptionally high in food value. With but three exceptions, the different kinds of candies are very much higher in fuel value than whole milk having a fuel value of only 315 calories per pound, cream 881 calories, whole eggs 695 calories, beefsteak 1,090 calories, corn 1,685 calories, rice 1,620 calories, white bread 1,180 calories, and corn bread 1,175 calories. The high nutritive value of chocolate candy is recognized by the leading military authorities of the world, and the "boys at the front" are satisfying their craving for "something sweet" with chocolate cakes and tablets and candies of various kinds. Scientists have demonstrated by careful experiments that during violent exercise or exhausting labor, the sugar in the blood is very heavily drawn on to supply the body with the necessary fuel, hence the longing for "something sweet" which can be readily assimilated, and which is most easily and conveniently supplied in some form of candy. The Swiss guides for mountain climbers consider lump sugar and sweet chocolate an indispensable part of their outfit. Children should have candy frequently. It is better to give them candy frequently than to give only occasionally, when the craving for it creates an almost irresistible temptation to overeat. It is especially desirable that candy should be served for dessert. A moderate amount frequently is better than an occasional overindulgence.

Northwest Medicine, Seattle

August, 1918, **17**, No. 8

81 Naval Attitude Toward Venereal Disease Problem. C. F. Ely, Bremerton.—p. 225.
82 Relation of Military to Venereal Problems. I. L. McGlasson, Camp Lewis.—p. 229.
83 Control of Venereal Diseases in Army. A. H. Peacock, Camp Lewis.—p. 233.
84 Seattle's Experience with Quarantine and Treatment of Venereal Disease. J. S. McBride, Seattle.—p. 236.
85 Prostitution in Seattle. W. R. Jones, Seattle.—p. 239.

Ohio State Medical Journal, Columbus

September, 1918, **14**, No. 9

86 Cancer of Breast. J. H. Jacobson, Toledo.—p. 524.
87 Some Things Learned in Cataract Work. A. J. Timberman, Columbus.—p. 528.
88 Some Uses and Abuses of Pituitary Extract in Obstetrics. J. L. Bubis, Cleveland.—p. 532.
89 Dentist's Responsibility in Preventive Medicine. H. C. Brown, Columbus.—p. 533.

Rhode Island Medical Journal, Providence

September, 1918, **2**, No. 9

90 Nodular Syphilis. C. A. Simpson,. Newport.—p. 131.
91 Recent Progress in Study of Certain Infections. A. M. Burgess, Providence.—p. 133.
92 State Hospital for Mental Diseases—Lantern Slides. A. H. Harrington, Howard.—p. 137.
93 Report of Meeting of State Secretaries in Chicago Regarding Medical Reserve Corps. J. W. Leech, Providence.—p. 139.
94 Case of Pott's Paraplegia Relieved by Spinal Bone Graft. R. Hammond, Providence.—p. 141.
95 Seminal Vesiculitis. H. Terry.—p. 143.

Social Hygiene, Baltimore

July, 1918, **4**. No. 3

96 Expression vs. Suppression. N. D. Baker, Washington, D. C.—p. 309.
97 Venereal Diseases in Army, Navy and Community. W. Lawrence.—p. 317.
98 War and Venereal Diseases Among Negroes. A. B. Spingarn.—p. 333.
99 Story of Committee of Fourteen of New York. J. P. Peters, New York.—p. 347.
100 Summary of New Public Health Measures for Combating Venereal Disease. G. Seymour.—p. 389.

United States Naval Medical Bulletin, Washington, D. C.

Supplement Published for Hospital Corps of Navy

July, 1918, No. 6

101 Training of Pharmacist's Mates at Hampton Roads, Va. W. H. Halsey.—p. 7.
102 Hospital Corps Training School at San Francisco. P. F. Dickens.—p. 11.
103 Hospital Corps Training School, Newport, R. I. H. L. Ryan.—p. 16.
104 Training Hospital Corpsmen in Navy. J. B. Kauffman.—p. 19.
105 Hospital Corps Training School, Great Lakes, Ill. G. L. Crain.—p. 22.
106 Training Hospital Corpsmen at Civil Hospitals in New York. R. Martin.—p. 25.
107 Field Work with Eighth Regiment of Marines. G. A. Gray.—p. 28.
108 Training at Quantico and Guantanamo. B. E. Kirwan.—p. 29.
109 Oral Hygiene. H. J. Leonard.—p. 32.

West Virginia Medical Journal, Huntington

September, 1918, **13**, No. 3

110 Pathology, Symptoms and Diagnosis of Brain Abscess of Otitic Origin. H. R. Johnson, Fairmont.—p. 81.
111 Maternal Impressions. R. L. Brown, Parkersburg.—p. 86.
112 Co-Operation of General Practitioners, Sanitarium, and Patient in Fight Against Tuberculosis. S. A. Slater, Oil City, Pa.—p. 91.
113 Physician's Duty to His Community. H. B. Wood.—p. 97.
114 Pyelitis. H. G. Camper, Welch.—p. 101.

FOREIGN

Titles marked with an asterisk (*) are abstracted below. Single case reports and trials of new drugs are usually omitted.

British Journal of Surgery, Bristol

July, 1918, **6**, No. 21

1 Case of Contusion of Axillary Artery. J. F. Dobson and W. R. Higgins.—p. 15.
2 Bone Growth and Bone Repair: Review. A. Keith.—p. 19.
3 *Bladder Injury in Warfare: Study of Fifty-Three Cases. A. Fullerton.—p. 24.
4 Ununited Fractures of Mandible; Incidence, Causation and Treatment. P. P. Cole.—p. 57.
5 Treatment of Gunshot Wounds of Face Accompanied by Extensive Destruction of Lower Lip and Mandible. V. H. Kazanjian and H. Burrows.—p. 74.
6 Results of Treatment in Two Hundred Cases of Injuries to Face and Jaws. W. M. Munby, A. A. Forty and A. D. Shefford.—p. 86.
7 *Primary and Delayed Suture of Gunshot Wounds. F. Fraser and others.—p. 92.
8 Acute Dilatation of Stomach. W. Doolin.—p. 125.
9 Case of Intestinal Obstruction; with Comments on Bursts of Intestine. R. Morison.—p. 135.
10 Rupture of Small Intestine into Mesentery, Result of Indirect Violence of Missile. H. Drummond.—p. 140.
11 Case of Subastragaloid Dislocation Reduced by Operation After Seven Weeks. S. A. Smith.—p. 144.
12 Case of Congenital Elevation of Scapula (Sprengel's Shoulder). R. M. de Mowbray.—p. 146.
13 Congenital Abnormality of Carpus. A. W. Connelly and H. A'Court.—p. 148.

3. **Bladder Injury in Warfare.**—Fullerton says that injuries of the bladder form a very small proportion of the total wounds reaching the base hospitals, one in 3,000 or 4,000. Their importance from the point of view of prognosis and treatment depends to a large extent on associated injuries. In the present series 35, or nearly 70 per cent., were complicated by injury to intestine or bone, or both. In 26 cases there was a wound of some part of the lower intestinal tract, and 13 of these were also complicated by osseous fracture. There were 19 cases of damage to the rectum. In 6 cases the small intestine was wounded. In 22 cases there was damage to the bones of the pelvic girdle. The pubic bone was fractured in 12 cases, once in association with the sacrum, once with the great trochanter, and once with the head of the femur, involving the hip joint. The sacrum was fractured in 5 cases; once in association with the pubic bone. The iliac bone was factured in 2 cases; once in association with the ischium. The ischium alone was fractured in one case. In 2 cases the coccyx was fractured. Damage to the prostate was present in 7 cases. The anterior crural nerve was injured in 1 case, the sciatic nerve in 2 cases, the femoral vein in 1 case, and the spine (concussion) in 1 case; involvement of the spermatic cord, necessitating orchidectomy, was present in 2 cases. According to Fullerton, the importance of the perivesical connective tissue cannot be overestimated. This forms a potential, continuous space extending from the cavum Retzii in front, round the sides of the bladder and rectum, to the posterior part of the latter behind. Pelvic cellulitis is a frequent complication.

The mortality of bladder injuries is very high, 13 deaths (over 24 per cent. in this series). In cases reaching the base it may be estimated at 30 per cent. The chief causes of death have been pelvic cellulitis, peritonitis, and sepsis. The chief sequelae are necrosis of bone, persistence of cystitis, calculus, and stricture at the neck of the bladder.

Fullerton points out that the treatment should be conducted on common sense lines. Accumulations of infected fluid, blood clot, and fecal material in the pelvic connective tissue must if possible be prevented by attention to the original wounds. If this is unsuccessful, suitably planned incisions should be made. The fact that urine flows over the surface of a wound is not necessarily in itself an indication for suprapubic cystostomy. If the bladder can be kept clean by irrigation, aseptic urine from the kidney does not appear to have a deleterious effect on the wound. Suprapubic cystostomy will drain an infected bladder, but will not prevent pelvic cellulitis and sepsis from occurring in the perivesical connective tissue and parietes, respectively. The after-treatment of the bladder by frequent irrigation is necessary to get rid of cystitis and prevent calculus formation.

7. Suture of Gunshot Wounds.—Of the 303 cases entered on the research list, primary or subsequent suture of the wounds was actually carried out in 285. Three patients died, a mortality of about 1 per cent. Comparison of results of the use of antiseptics showed that among 41 cases of primary suture, primary union (complete or partial) occurred in 37 with failures in 4 cases. With a few exceptions, only the slighter wounds have been treated without antiseptics, and this may account for the results without antiseptics being the best (90 per cent. of successes). As regards immediate suture, flavine and ether come next (86 and 84 per cent. of successes), then soap and bismuth iodoform petrolatum paste (about 76 per cent.).

Regarding delayed suture, the figures, so far as they go, show a decided superiority over the results given by immediate suture. Of 224 wounds sutured primarily, cultures were made in 215. Of the latter, 21 were negative; all these healed completely by first intention. The remaining 194 were infected with anaerobes, streptococci, or other organisms mentioned in the bacteriologists' report. In the 194 infected wounds treated by immediate suture, anaerobes occurred in 119, nonhemolytic streptococci in 62, hemolytic streptococci in 20 and other organisms in 95.

The general conclusion drawn from these figures by the committee is that wounds infected by the hemolytic streptococcus nearly always become septic, while a large proportion of wounds infected in other ways healed by first intention. Failure took place in only one case of primary suture which was infected by anaerobes alone; in this case a muscle flap used for filling a bone cavity sloughed and a gaseous abscess developed in the wound. Only one case infected by hemolytic streptococci (a small wound penetrating the knee joint without damage to bone) healed by first intention; all the rest suppurated, many of them violently and with severe constitutional disturbance. Infections by nonhemolytic streptococci as a general rule appear to be less virulent. When failure occurs, the suppuration is usually milder than that characteristic of the hemolytic streptococcus. Sometimes, however, the nonhemolytic streptococcus, in association with other organisms, appears to set up sepsis of a very severe type.

The advantage which delayed suture offers as compared with immediate suture depends on the knowledge of virulent infection gained during the interval while the wound is open. Even if a bacteriologic examination has not been made, the appearance of a virulently infected wound when first dressed, forty-eight or seventy-two hours after operation, is usually distinctive, and it is not sutured. In this way the proportion of failures after delayed suture should be reduced to a very small percentage. While no antiseptic tried by the committee either in open or closed wounds, appears to have any appreciable effect on the growth of the hemolytic streptococcus, the results of the use of flavine point to the probability that chemical antiseptics, when applied to the surface of open wounds infected with bacteria of less virulence, may fulfil a useful function.

It was found advisable to discontinue the use of flavine solution after four or five days, as wounds treated continuously with this substance for longer periods tend to become covered with a layer of coagulated lymph or necrosed tissue in which bacterial growth appears to flourish. Used in the early stages for a limited time, flavine gives satisfactory results.

The committee found that the narrow track of a bullet which has passed into or through a limb, without producing an explosive effect by spinning or striking a bone, is usually sterile, and that operation on wounds of this type is unnecessary. Further, they found that where the entry wound and part of the track are clean and narrow, while the exit is lacerated, only the exit wound is likely to be infected. In such a case operation should be limited to a careful cleansing of the exit wound, damaged tissue being removed only till the orifice of the narrow track is exposed. A culture taken by introducing a swab into the latter will probably be negative, and this part of the wound need not be interfered with.

British Medical Journal, London

Aug. 17, 1918, **2**, No. 3007

14 *Ischemic Myositis. J. P. Stewart.—p. 151.
15 *Cases of Subacute Bacterial Endocarditis. H. J. Starling.—p. 154.
16 Attempt to Breed Tubercle Immune Cattle. L. J. Picton.—p. 157.
17 *Modification of Stokes-Gritti Amputation. W. A. Chapple.—p. 158.
18 *An Acid-Fast Bacillus Obtained from Pustular Eruption. L. Cobbett.—p. 158.

14. Ischemic Myositis.—Stewart advises treating this class of case by means of a careful and systematic stretching of the shortened tissues as recommended by Sir Robert Jones.

15. Subacute Bacterial Endocarditis.—Starling reports five cases. Particular attention is directed to certain symptoms. 1. Ephemeral spots of painful nodular erythema which were noted in two cases and had recurred for some months (at least six months in one case) before admission to the hospital. The patients paid less attention to the spots than to the fact that their finger-tips were on occasions tender when handling anything. Two patients stated that some days after all the tenderness and swelling had disappeared they were able to pick the so-called scab off the fingers. In one case a node appeared on the pinna of the left ear. 2. Petechiae were seen in all the cases in varying degrees and at different times. In two cases they occurred in showers, being scattered freely over the chest, abdomen and thighs. 3. Splenic enlargement was present in all the patients on or soon after admission to this hospital. The degree of enlargement varied with and in each case. 4. In no case was the pyrexia severe. 5. In four cases was demonstrated the occurrence of arterial embolism in a degree which is most unusual and worthy of record: (1) at the bifurcation of the left brachial artery; (2) at a branch of one of the left retinal arteries; (3) (*a*) in the right radial artery at the wrist; (*b*) in the left popliteal artery in the bend of the knee joint; (*c*) in a branch of the left suprascapular artery; (4) (*a*) in the left femoral artery; (*b*) in the left posterior tibial artery, in both instances before admission to this hospital; (*c*) at the junction of the right axillary and brachial arteries. 6. Hematuria was not marked in any of these cases.

17. Modification of Stokes-Gritti Amputation.—Chapple cuts the quadriceps attachment to the upper edge of the patella completely across, and then stitches the margins of the patella with catgut to the edge of the periosteum round the end of the femur. One or two additional deep catgut sutures will usually be sufficient, and a firm button suture through the skin flaps will make assurance doubly sure.

18. Acid-Fast Bacillus Obtained from Pustular Eruption.—The bacillus was cultivated by Cobbett from chronic intractable pustules covering the back, buttocks, and thigh of a soldier returned from France. No micro-organisms were seen in the pus, and none could, at first, be cultivated from it. But subsequently there was grown, on more than one occasion, an acid-fast bacillus which is the subject of this note.

Journal of Laryngology, Rhinology and Otology, London

August, 1918, **33**, No. 8

19 Two Years Intubation Followed by Tracheal Fistula. E. Mayer.—p. 225.
20 Report for Years 1916-1917 from Ear and Throat Department, Royal Infirmary, Edinburgh. T. Ewing.—p. 227.
21 Intrinsic Cancer of Larynx and Operation of Laryngofissure. I. Moore.—p. 234. To be continued.
22 An Apparent Cure of Endothelioma or Sarcoma of Trachea with Radium Emanations. B. S. Jones.—p. 242.

Journal of State Medicine, London

August, 1918, **26**, No. 8

23 Effects of War as Shown in Vital Statistics. B. Mallet.—p. 225.
24 Constructive Suggestions in Regard to Proposed Ministry of Health. E. W. Hope.—p. 248.

Journal of Tropical Medicine and Hygiene, London

Aug. 15, 1918, **21**, No. 16

25 *Treatment of Malignant Malaria in East Africa. M. Roche.—p. 165.

25. **Treatment of Malaria in East Africa.**—African malignant malaria has been completely eradicated quickly and easily by means of intramuscular injections of quinin spread over a month. Sixty grains of quinin bihydrochlorid were given by eight injections, each of 7½ grains. Roche says that about 80 per cent. of cases of cerebral malaria can be cured by quinin if it is energetically injected into the muscles and the rectum. The remaining cases are usually both unconscious on admission and of fatal termination.

Lancet, London

Aug. 17, 1918, **2**, No. 4955

26 Celiac Disease. G. F. Still.—p. 193.
27 *Treatment of Cases of Shell Shock in Advanced Neurologic Center. W. Brown.—p. 197.
28 Differential Diagnosis of Dysenteries. J. G. Willmore and C. H. Shearman.—p. 200.
29 Recent Epidemic of Smallpox in Field. G. H. Mead.—p. 206.

27. **Treatment of Shell Shock.**—In two series of 1,000 cases each Brown treated 173 in the first, and 132 in the second by means of hypnosis. In these two series there were altogether 121 cases of loss of speech, or hysterical mutism. He succeeded in curing every single one of these cases. Many of the patients were deaf as well as dumb. These were given a paper of instructions to read, in which they were told to lie down, close their eyes, and give themselves up to sleep. When such a patient showed by the calm look on his face that he had reached a quiet frame of mind, Brown would suddenly and unexpectedly bang two books together near him, and have the pleasure of seeing his eyes flicker, and then find that he could hear. Brown could then continue the treatment by word of mouth in the ordinary way.

Brown is convinced that the essential therapeutic agent in the case of hysteria caused by shell shock is "abreaction," or the working off of the repressed emotion caused by the shock. Mental analysis is a means to this end, and light hypnosis, applied under proper safeguards, is the quickest and most effective method of effecting this analysis, in cases in which amnesia is present and the patient is seen early. For cases of neurasthenia, which are the more numerous and involve emotional preoccupation often dating back many years, mental analysis and reeducation, without hypnosis in any form, are the needful agents, although the abreaction of the original emotional disturbance or disturbances is again essential. In both classes of cases the arousing of sthenic emotion in the patient's mind is an important adjunct in the cure, both in the form of enthusiastic confidence in his physician and expectation of a complete recovery, and also in the form of vivid interest in some form of occupation in the stage of convalescence, during which the mind becomes more unified and consolidated.

Rest, is, of course, also fundamental. But no complete rest is possible while the mind is obsessed with bottled-up emotion. This emotion must be completely worked off, and then true rest will come. The preoccupations of the neurasthenic also must first be dealt with if any form of rest cure is to produce good results. After three and a half years of work with nerve patients in military hospitals in Egypt, England and France, during which over 4,000 cases have passed through his hands, Brown feels no hesitation in saying that mental analysis is the ideal method of treatment, provided that it is carried far enough to produce true abreaction of emotional states.

Medical Journal of Australia, Sydney

July 30, 1918, **2**, No. 3

30 Surgical Importance of Interscapular Gland. H. C. R. Darling.—p. 45.
31 Treatment of War Wounds of Knee Joint at Base in France. W. G. D. Upjohn.—p. 50. To be continued.

Aug. 3, 1918, **2**, No. 5

32 *Early Recognition of Feeblemindedness and Other Forms of Social Inefficiency. R. J. A. Berry and S. D. Porteus.—p. 87.
33 Treatment of Bone and Joint Wounds. L. G. Teece.—p. 91.

32. **Early Recognition of Feeblemindedness.**—As the result of a prolonged research, Berry and Porteus publish what they believe is a practical method for the early recognition of feeblemindedness and other forms of social inefficiency: (1) The person's brain capacity is first ascertained, and is compared with the percentile brain capacity of the population. This examination is supplemented by physical and psychophysical tests proved to have diagnostic significance. (2) A psychologic examination is then carried out as thoroughly as possible. The authors do not depend on the application of any single set of intelligence tests, but on a combination of methods. (3) Finally, the whole examination is correlated with the clinical, personal, family and educational history of the person, and the results interpreted in the light of the person's social environment.

The hypothesis on which the authors base their work is, that, as mental development is conditioned by brain capacity, striking deviation from the normal in brain size will tend to be associated with mental abnormality. In order to determine the cubic capacity of brain of a normal living boy or girl, at different ages of their educational career, the authors examined some 10,000 children and university students, with control cases drawn from known abnormal sources. Next the range of variation from the mean was determined and how far, if at all, extremes in this range were to be regarded as abnormal. For the former Berry and Porteus have employed the standard deviation and other well known statistical methods of mathematical science. For the latter they made use of Sir Francis Galton's method of percentiles, and the standard deviation as a unit of possible abnormality.

A table of percentiles was constructed from the results of these findings. Certain facts of importance in the early recognition of feeblemindedness and other forms of social inefficiency are clearly revealed. These are: (1) That head measurement alone is, and must always be, an uncertain guide as a measure of intellect or its lack. (2) That, as mental development is entirely dependent on brain matter, striking deviation from the normal in brain size tends to be associated with mental abnormality. (3) That when this deviation attains a certain sufficiently high degree, it must be revealed by head measurement and the calculation therefrom of brain size. (4) That such cases of striking deviation are due, in many instances, to developmental failure of the outer, supragranular, or "intellectual" layer of the cerebral cortex, and as this necessarily means a greatly diminished number of myelinated neurones, there will be a smaller sized brain, which head measurement, even in its present imperfect stage, is capable of detecting. Hence, small headedness will be of more diagnostic significance than large headedness. (5) That the authors' percentile tables of brain capacity are distinct aids to the diagnosis of mental inefficiency, and afford a more certain basis for the psychologist to work on than has hitherto been the case, because they afford some clue to the relative development of the supragranular (educational) and infragranular (instinctive) layers of the cortex cerebri of the person.

Archives des Maladies du Cœur, etc., Paris

August, 1918, **11**, No. 8

34 *Clinical Forms of Malignant Endocarditis. H. Vaquez.—p. 337.
35 Heart Block with Transient Changes in the Ventricle Beat. P. D. White (Boston).—p. 352.
36 Heart Disease and Fitness for Service. J. Heitz.—p. 355.

34. **Malignant Endocarditis.**—Vaquez discusses the acute, subacute and protracted forms of vegetative endocarditis, saying that only the acute form is primary; the others are generally grafted on some old valvular lesion. The name *Streptococcus viridans* applied to the microbe of the protracted type is not a good one, as the green tint that surrounds the cultures is not a constant phenomenon, and there seems to be no reason for thus distinguishing the streptococcus of malignant endocarditis. In seven of his nine personal cases he found the streptococcus in the blood, but in the two others only the pneumococcus was found.

Archives Médicales Belges, Paris

June, 1918, **71**, No. 6

37 *Kinetic Plastics and Prostheses. M. Stassen.—p. 657; Theory. J. Vanghetti.—p. 663; Technic. Pellegrini.—p. 675.
38 *Kinetic Amputation. S. Pieri.—p. 688.
39 *Meningeal Reactions of Syphilis. B. Dujardin.—p. 706.
40 *War Neuropsychiatry. H. Hoven.—p. 721.

37. **Kinetic Plastics.**—The principle of adapting the stump after amputations to utilize all the muscular force left in the various muscles and tendons has been repeatedly described in these columns. A series of articles here describe the principle and technic for the plastic operations and likewise for the amputations, with examples of the various types and the results realized in motor functioning. Pellegrini lines the tunnel through the muscle by rolling into a tube a horizontal transverse strip of skin left attached at both ends. The tube thus formed is the bar over which the tendons or muscles are sutured to form a loop. The skin around is then sutured to cover the whole except at the attached ends of the skin tube. A steel hook coated with celluloid is run through the skin tube, and thus the motor force in the tendon or muscle loop can be imparted directly to the steel hook and from this to the prosthesis. A man amputated in the forearm is shown holding a pail, a valise, a carafe, and writing with the artificial hand, all under motor control. The whole kinetic operation can be done at one sitting.

38. **Amputations for Kinetic Prostheses.**—Pieri emphasizes the necessity for bearing the later kinetic plastics in mind when amputating. The best motor functioning is realized with the free loop; for the forearm, a double loop, one for extension and one for flexion. An ample supply of sound skin is of the greatest importance not only to line the tunnels but also to cover the outside of the loop, the portion most exposed to trauma. His illustrations show the technic for the various amputations to fulfil these conditions. The *Archives* thus brings the whole subject of kinetic plastics down to date, with twenty-five illustrations.

39. **Meningeal Reactions in Syphilis.**—Dujardin has had occasion to do lumbar puncture on a large number of syphilitics before, during and after treatment. For about two weeks after the syphilitic chancre no appreciable reaction in the cerebrospinal fluid is apparent. Then as the spirochetes enter the blood, the sensitive meninges respond to the irritation with slight lymphocytosis while the skin shows as yet no sign of irritation. As the septicemia progresses, the spirochetes proliferate in the skin foci. Not until several weeks later do they proliferate in the meninges; by this time the organism has become relatively immunized against the spirochete, and this explains the comparative mildness of the meningeal and nervous phenomena. The ephemeral character and the fluctuations in this immunization explain the play of subsequent recurrences. For instance, arsenical treatment destroying the more accessible skin foci, puts an end to the vaccination, and if the arsenical treatment is stopped too soon, the result may be renewed proliferation of the spirochetes in the meningeal foci. An inadequate course of arsenical treatment may thus entail a violent meningeal reaction. On the other hand, nothing is more encouraging than to watch the effect on the meningeal reactions of a properly conducted course of arsenical treatment.

40. **Shell Concussion.**—Hoven says in the conclusion of his review of the present status of war neuropsychiatry, that the prognosis of organic nervous disturbances from shell concussion is grave; their evolution is always long. But all the other disturbances rapidly subside.

Archives de Médecine des Enfants, Paris

August, 1918, **21**, No. 8

41 *Desquamating Erythrodermia in Infants. J. Comby.—p. 393.
42 *General Paralysis from Inherited Syphilis. J. S. de Sousa.—p. 425.
43 Chloroma. J. Comby.—p. 427.

41. **Desquamating Erythrodermia in Infants.**—Comby has encountered generalized exfoliating dermatitis in thirty newborn infants in the last few years. They were usually well developed and no defects in hygiene could be incriminated in the majority. It develops early, never later than two months, but it has certain analogies with the eczema rubrum of older children. The epidermis drops off in large flakes as with scarlet fever or burns of the second degree. There are no grave general symptoms, no blistering or suppuration unless ill advised medication induces irritation. Seborrhea of the scalp generally accompanies it and persists after it. Under dry powdering the dermatitis soon subsides.

42. **General Paresis with Inherited Syphilis.**—Sousa's patient is a boy of 7 who was apparently healthy till the age of 5.

Bulletin de l'Académie de Médecine, Paris

July 30, 1918, **80**, No. 30

44 *Emotion and Commotion. Dupré and Logre.—p. 124.
45 *Automatic Regulator for Carrel Treatment. Daure.—p. 134.
46 Three-Day Fever on Hospital Ship. P. Joly and Baril.—p. 138.
47 *Serum Treatment of Epizootic Lymphangitis. P. Latour.—p. 141.

44. **Shell Concussion.**—Dupré concludes his study of the *syndrome commotionel* by emphasizing the analogy between its symptoms, from the initial unconsciousness to the tardy changes in character and in the capacity for resistance and effort, and the symptoms to which we are accustomed with an apoplectic stroke. The latter may be regarded as a *syndrome commotionel* of internal origin, while the shell shock is the result of similar sudden disturbance in the circulation of external origin. The physical commotion induces apoplectic coma, while an emotional shock sets in play the defensive motor reactions of the instinct of self preservation, but repeated emotional shocks may lead to nervous exhaustion by a kind of emotive anaphylaxis. A violent shell concussion as well as an intense emotional stress may lead to a grave psychopathic condition of delirious nature, chronic and tending to dementia. In several instances he has witnessed a catatonic or hebephrenic psychosis, characteristic and incurable, develop at once after a shell concussion or after intense emotional stress.

45. **Automatic Regulator for Irrigation.**—Daure interposes in the supply tube a reservoir which automatically tips up when a certain amount of fluid has dripped into it. When the reservoir contains the desired amount (gaged with precision) it tips over and pours the fluid into the tube below. The contrivance was devised for Carrel treatment, which is now being applied to mastoid cases, but it may prove useful also in other fields.

47. **Epizootic Lymphangitis.**—Latour relates that great ravages are being caused among the army horses by contagious lymphangitis imported by the African contingents. No treatment proved effectual until the serum from convalescent horses was administered by subcutaneous injection. The results were excellent, he says, in the twenty-eight horses given this treatment. Some of the horses were given daily injections of 10 or 20 c.c. but the best results were obtained with massive doses, 100 c.c., at four or five day intervals. The second injection was followed by marked improvement and the cure was complete as a rule after the fourth or fifth. Twenty-four of the twenty-eight horses resumed their service in from three to six weeks, while with all other treatment the disease dragged along for three or four months.

Bulletins de la Société Médicale des Hôpitaux, Paris

May 17, 1918, **42**, No. 17

48 *Lethargic Encephalitis. Alfred-Khoury.—p. 455.
49 *Primary Poliomesocephalitis with Narcolepsy. De Saint-Martin and J. Lhermitte.—p. 457.
50 Febrile Nervous Form of Epidemic Influenza. A. Chauffard.—p. 462.
51 *Orchi-Epididymitis. G. Faroy.—p. 465.
52 Oculomotor Reflex with Orbital Tumor. Rouquier.—p. 467.

48. **Lethargic Encephalitis.**—Khoury reports a case in a man of 55, distinguished by attacks of jacksonian epilepsy. The somnolency was the only symptom for a week, then came fever, bilateral ptosis, strabismus, retention of urine, and convulsions on one side. The urine and spinal fluid seemed approximately normal till death the twenty-third day. In the discussion that followed, four similar cases were mentioned, all of recent date, the fever not appearing for a week or ten days.

49. **Primary Poliomesocephalitis with Narcolepsy.**—De Saint-Martin and Lhermitte report two cases in which headache and invincible somnolence for a few days were followed by diplopia and ptosis. The bilateral paralysis of the third pair was complete, involving not only the external ocular muscles

but the musculature of the iris, with paralysis of accommodation and the light reflex, but no signs of involvement of other nerves or the cerebellum. They define the cases as primary superior polioencephalitis, and regard them as the same disease which Chauffard and others have been reporting and calling lethargic encephalitis. They think this name should be reserved for sleeping sickness. In the district in central France where they encountered the two cases reported, an epizootic is prevailing among poultry almost in endemic form.

51. **Orchi-Epididymitis.**—In one of the two cases described the orchi-epididymitis developed during convalescence from mild colon bacillus sepsis and in the other during convalescence from typhoid. It proved transient in the first case, but has persisted in the other during the nine years to date.

Journal de Chirurgie, Paris

June, 1918, **14**, No. 5

53 *War Wounds of Vessels. J. Okinczyc.—p. 441.
54 *Appendicostomy in Treatment of Acute Dysentery. G. Cotte.—p. 465.

53. **War Wounds of Blood Vessels.**—Okinczyc discusses the immediate hemorrhages and diffuse hematomas, the secondary hemorrhages and the tardy disturbances in the form of aneurysms. Among 220 wounded, 24.7 per cent. had one or more large blood vessels injured. When they do not bleed at once, the injury is liable to be overlooked, and he emphasizes the importance of seeking involvement of the vessels in war wounds as a routine practice. The traject of the projectile, roentgenoscopy revealing a projectile near a vessel, and spontaneous or induced pain in the course of a vessel are all instructive. This pain localized in the wounded vessel, sometimes extending to the whole limb, is the more remarkable, he says, because war wounds, aside from fractures, are generally only slightly painful at first. One man, for instance, had eight or ten wounds on the legs, buttocks and lumbar region. The left thigh seemed to have escaped as there was no trace of a projectile having entered. But the man complained of pain in this thigh alone, pointing to a spot over the femoral artery. On the basis of this pain, Okinczyc cut down to the artery and found that it had been grazed by a projectile on its way downward, and there was thrombosis for 2 cm. The discouraging frequency of gangrene after ligatures has compelled him to look about for other procedures.

54. **Appendicostomy in Dysentery.**—Cotte has applied this method of treatment in five grave cases of acute dysentery, and the results were so fine that he thinks it deserves wide adoption. He cut off the appendix, leaving only enough of a stump to hold the catheter. The cecum was fastened with four silk stitches to the parietal peritoneum. The latter was sutured except for the catheter. General anesthesia is necessary; in the one case done under local anesthesia, the cecum and colon had slipped entirely out of sight and could not be found without manipulations which the debilitated patient would have been unable to stand. Cotte used always a 1 per thousand solution of silver nitrate, repeating the lavage every day or second day until the stools were formed.

Lyon Chirurgical

March-April, 1918, **15**, No. 2

55 *Experimental Study of Healing of Nerves. J. Nageotte.—p. 245.
56 The Circulatory Disturbances in Shock. H. Delaunay.—p. 293.
57 *Lumbar Puncture in War Surgery. F. Albert.—p. 328.

55. **The Healing of a Severed Nerve.**—Nageotte's account of his extensive experimental research is profusely illustrated. Among the conclusions is the statement that the interposition of a nerve graft—in dogs—aids in the regeneration so that healing may proceed perfectly, with complete restoration of function. The nerve graft was kept in alcohol (50 degrees). The young nerve fibers are attracted into narrow interstices, and this stereotropism is favored by providing the regenerating nerve with a graft of easily permeable tissue, with longitudinal interstices. A graft from a rabbit nerve is best adapted for the purpose, but as this is so small, he preferred a nerve graft from a calf fetus. This dead heteroplastic nerve graft gave perfect results in some of the dogs. He thinks that these findings might apply to human beings, but the graft would have to be made early. In old wounds, changes in the stumps of the nerves would render any intervention futile.

57. **Lumbar Puncture with Skull Wounds.**—Albert expatiates on the advantages of lumbar puncture in surgery of the skull. It differentiates simple meningeal irritation from local compression of the cortex, and simple hernia of the brain from hernia caused by an inflammatory process below. With the latter, the hernia does not collapse even after repeated lumbar puncture. The latter is indicated in treatment of concussion of the brain, fracture of the base of the skull, and for all cases of irritation of the cortex with increased secretion. He reiterates that when the condition is not improved by lumbar puncture, some serious injury may be assumed, calling for craniectomy. Among the fifteen cases described to illustrate the benefit in these various conditions, are four of post-traumatic meningitis.

Paris Médical

July 6, 1918, **8**, No. 27

58 *Headache after Shell Concussion. A. Mairet and H. Piéron.—p. 1.
59 Persisting Functional Disability. Laignel-Lavastine.—p. 7.
60 Lead Meningitis. P. Lereboullet and J. Mouzon—p. 12.
61 Goose Flesh Reactions to War Wounds. Andre-Thomas.—p. 16.
62 Traumatic Cerebral Hemorrhage. Chavigny.—p. 28.
63 Discharge for Insanity in Soldiers. R. Benon.—p. 29.

58. **Headache After Shell Concussion.**—Mairet and Piéron call attention to symptoms indicating irritation of the trigeminal nerve after a shell concussion. There probably are minute suffusions of blood responsible for the irritation. The latter induces headache and tenderness along the nerve, and this sign of trigemino-occipital irritation is objective testimony to the concussion. Pressure on the emerging point of the nerve, especially above the orbit, causes pain which spreads to the back of the head, along the course of the great occipital nerve.

Presse Médicale, Paris

Aug. 1, 1918, **26**, No. 43

64 *War Wounds with Streptococci. Plisson, L. Ramond and J. Pernet.—p. 393.
65 Primary Reunion of War Wounds. Ehrenpreis.—p. 395.

Aug. 5, 1918, **26**, No. 44

66 *Serotherapy and the Myth of Anaphylaxis. Jousset.—p. 401.
67 *Tardy Effects of Concussion. A. Léri.—p. 403.
68 *Mixed Anesthesia. J. Pellot.—p. 405.
69 *Resection of Hip Joint. P. Chutro.—p. 406.
70 *Action of Epinephrin on Gastro-Intestinal Tract. L. Binet.—p. 407.
71 Local Anesthesia for the Eye and Orbit. Duverger.—p. 408.

64. **The Streptococcus in War Wounds.**—Plisson, Ramond and Pernet remark that streptococcus war wounds constitute at present an entirely new morbid entity, as they are set apart from all other war wounds, primary suture being forbidden them. The course of sixty-seven war wounds containing streptococci is reviewed here. They all are in chains and take the Gram, but otherwise they differ so widely that it is always a question as to the unity or plurality of streptococci, but all forms seem to be equally dangerous in war wounds. They induce an infection like an actual erysipelas of the walls of the wound, against which the organism vaccinates itself only slowly and tardily. It takes weeks for a streptococcus wound to heal up, but a fatal termination is exceptional. After the danger of gas gangrene is past, the prognosis is not grave for the man himself, but it is grave for the state, as he is kept suppurating for months, and the army thus loses his services. No method of disinfection to date has proved effectual against the streptococcus, but the progress of the wound can be hastened by secondary operative measures, Thiersch flaps or exsection, as for a tumor, of a wall of tissue, including the whole of the wound and 2 or 3 mm. beyond its edges and its bottom, which one avoids touching during the operation; strict hemostasis; primary suture with filiform drainage at each end. These secondary operations were never done before the third week, by which time the organism had evidently acquired a certain amount of immunity in respect to the streptococcus. No antiserums or colloidal metals, etc., ever displayed any efficacy; the reliance must be

on the organism itself to accomplish its own vaccination. Prophylaxis is the main thing. Segregation of all the streptococcus cases is important, but the best guarantee against streptococcus infection is the early and minute *épluchage* of the wounds.

66. **Serotherapy and the Myth of Anaphylaxis from It.**—Summarized, August 17, p. 605, when published elsewhere.

67. **Tardy Effects of Concussion.**—Léri refers to cases in which the focal lesions in the nerve centers from the concussion from a shell explosion did not develop until several days or weeks afterward. By that time the connection with the shell concussion is apt to be overlooked or unrecognized, and the nervous disturbance, paralysis, hemiplegia, etc., are liable to be mistaken for hysterotraumatism, etc. Among the various types of these *commotions retardées* are the forms with generalized muscular atrophy, aphasia, hemiplegia or amyotrophic paralysis of the quadriplegic type. The prognosis of these tardy manifestations seems to be far more favorable than for those that develop at once. Nearly all the men whose stories are related had recovered more or less completely in the course of a few months to a year. The fact that these organic lesions in the spinal cord or brain may not reveal themselves for several days or weeks or months is important from the medicomilitary standpoint. The acquired fragility of the vessels in the brain and spinal cord of men who have suffered a concussion of this kind should be borne in mind in the estimation of focal lesions which develop later. Léri adds that the question of *amyotrophies post-commotionelles* has not been brought up before. The very slow and progressive development of the muscular atrophy has prevented its real cause from being discovered.

68. **Mixed Anesthesia.**—Pellot has devised an apparatus with which 15 parts ethyl chlorid are given with 3 parts of ether and 2 parts of chloroform; 20 c.c. of the mixture insures complete anesthesia for twenty minutes. He claims for it all the advantages of pure ethyl chlorid with none of its disadvantages.

69. **Resection of Hip Joint.**—Chutro describes with illustrations a method of operating in case of grave infection of a war wound of the hip. The oblique osteotomy of the neck of the femur permits good drainage while retaining the upper surface of the neck its entire length; and retaining the capsular muff intact. The wound is drained with six or eight Carrel tubes. In his nine cases the whole intervention took only ten minutes, and the hip joint was left functionally capable with an average shortening of only 3 cm.

70. **Action of Epinephrin on Digestive Tract.**—Binet's review of the literature demonstrates that epinephrin has an undoubted modifying action on the vascularization, secretion and motor functioning of the digestive tract. Introduced directly into the stomach, epinephrin does not seem to display any toxic action. But introduced into the rectum, it proves very toxic in doses similar to those that are lethal for the animals when injected subcutaneously. He ascribes this to the close anastomoses between the hemorrhoidal veins and the portal vein, the liver being apparently the barrier which arrests the epinephrin ingested. Neither pepsin nor trypsin nor passage through intestinal capillaries seems to alter the epinephrin ingested. On the other hand, digestive disturbances from suprarenal insufficiency are known. These and other data learned from experimental research are useful, he says, to guide the physician. They are instructively supplemented by Grasset's case in which 35 gm. of 1 per thousand solution of epinephrin was swallowed with suicidal intent, without appreciable results.

Correspondenz-Blatt für Schweizer Aerzte, Basel

Aug. 10, 1918, **48**, No. 32

72 *The Influenza Epidemic. R. Staehelin.—p. 1057.
73 Present Status of Tuberculosis. O. Amrein.—p. 1060.
74 Cancer Statistics. Labhardt.—p. 1066; J. Aebly.—p. 1069.
75 *The Osmotic Pressure in the Serum in Typhoid. A. E. Alder.—p. 1072.

72. **The Influenza Epidemic.**—Staehelin writes from Basel that the prevailing epidemic resembles in every respect the pandemic of influenza in 1889 only that it is apparently more malignant. The influenza bacilli have been cultivated from blood and sputum in different localities, and pneumonia seems to be a frequent manifestation; forty-six of the 309 cases in his service in about six weeks terminated fatally. Leukopeny seems to be constant in the more serious cases, and an eruption resembling that of scarlet fever is common. He isolates the sick as for diphtheria, and there has been no ward contagion but two of the attending physicians, seven nurses and four attendants in contact with the sick have had the disease. The salicylates reduced the temperature temporarily and camphor proved useful in pneumonia, especially with venesection when the latter was indicated.

75. **Freezing Point of Blood Serum in Diagnosis of Typhoid.**—Alder investigated the osmotic pressure in the blood serum of twelve typhoid patients and tabulates these and the metabolic findings, as also in four other patients whose disease proved not to be typhoid. In 75 per cent. of the typhoid cases the osmotic pressure in the serum was found decidedly reduced at the very beginning and through the height of the disease. In the others it fluctuated. He suggests that this early reduction in the osmotic pressure as shown by the freezing point may prove useful in the very early differential diagnosis of typhoid.

Annali di Ostetricia e Ginecologia, Milan

February, 1917, **19**, No. 2, Pub'd, August

76 *Obstetric Ureter-Bladder-Vaginal Fistulas. A. Bertino.—p. 41.
77 *Pregnancy Chorea. S. Flamma.—p. 69.

76. **Obstetric Lacerations.**—Bertino reports a case in which there was both a vesicovaginal fistula and a fistula between ureter and vagina. The latter was not discovered until the persisting drizzling of urine after the first fistula had been corrected led to its discovery. Both fistulas were evidently the result of simultaneous injury during delivery at term with a moderately contracted pelvis, probably when the fetal head was being rotated. A functional cure was realized by implanting the ureter in the bladder wall by an extraperitoneal technic.

77. **Pregnancy Chorea.**—Flamma's patient was a woman of 21 and the chorea developed at the third month of her first pregnancy. The chorea growing worse was accepted as an indication to arrest the pregnancy, after which it gradually subsided. Becoming pregnant a year later the choreic movements recurred, commencing in the second month. The woman and her husband begged to have abortion done as the choreic movements were incessant and severe. Convinced that the trouble was principally of nervous origin, a sham obstetric intervention under chloroform anesthesia convinced the couple that the abortion had been done, and the chorea rapidly and completely disappeared. As the pregnancy approached term and the couple realized that their wishes for a child were to be gratified without the woman's suffering from the chorea, they were very much pleased. Flamma reviews the literature on chorea gravidarum. Chorea in childhood, hysteria, a fright or an inherited neurotic taint are frequently mentioned in the antecedents, but in some cases no factor could be incriminated except the pregnancy. He remarks that pregnancy chorea and chorea in the pregnant are not necessarily the same thing. The mortality of pregnancy chorea is given as 8.3 per cent. in one of the latest compilations. Sham interruption of the pregnancy proved effectual also in another case in the clinic in which the psychogenous manifestations took the form of incoercible vomiting. These twin cases with the same origin but different manifestations, cured by the same measure, confirm the conception of a psychogenous origin. Before inducing actual abortion in dubious cases of the kind, a sham intervention may answer the purpose.

Pediatria, Naples

August, 1918, **26**, No. 8

78 *Tuberculin Test in Measles. O. Cozzolino.—p. 449.
79 *Partial Wet Nursing. A. Borrino.—p. 457.
80 Torpor of Blood-Producing Organs. G. Milio.—p. 467.

78. **The Tuberculin Reactions in Measles.**—The veering from positive to negative in the response to the tuberculin

test during measles is ascribed by Cozzolino to the changes in the skin induced by the eruption.

79. **Supplementary Wet Nursing.**—Borrino refers to cases in which the mother's milk is absolutely inadequate or the breast is deformed, or the mother is severely ill. Under these conditions, instead of resorting to artificial feeding, she advocates securing the services of a woman living at home and nursing her own child, who will give the breast to the infant a few times during the day. Four typical cases are described in which very sick infants were thus tided along in good condition until the mother could nurse them adequately herself.

Gazzetta degli Ospedali e delle Cliniche, Milan

June 27, 1918, **39**, No. 51

81 Relations between Functional Derangement in Internal Organs and the Suprarenals and Other Endocrine Glands. C. Amistani.—p. 505.
82 *Iodoform Treatment of Tuberculous Pleurisy and Peritonitis. M. Maurizi.—p. 507.

July 4, 1918, **39**, No. 53

83 Sulphur Ointments. L. Sabbatani.—p. 514.

July 7, 1918, **39**, No. 54

84 Reflex Nervous Disturbances. E. Greggio.—p. 521.
85 Bacteriology of the Blood with Three-Day Fever. I. Salvioli and M. Savini.—p. 524.
86 *Early Operations for War Wounds. G. Pisano.—p. 525.

82. **Iodoform Treatment of Tuberculous Pleuritis and Peritonitis.**—Maurizi reports excellent results from injection of a suspension of 2 or 4 gm. of iodoform in 10 or 20 gm. liquid petrolatum in treatment of tuberculous pleuritis. The iodin released slowly from the suspension kills the tubercle bacilli, and this in turn generates what amounts to an autotuberculin, while the absorption of the effusion is a kind of autoserotherapy. He begins with an exploratory puncture but does not remove the effusion unless it is in excessive amounts. There may be a febrile reaction which reaches its height next day and lasts from five to seven days. Generally one injection answers the purpose. He keeps the patient on milk exclusively as long as the reaction is apparent. Surgical treatment is necessary with staphylococcus or streptococcus empyema, but it is contraindicated for the tuberculous. It does not cure the primary process while it is liable to set up associated infection and entail an incurable fistula. Capparoni uses glycerin instead of liquid petrolatum, but Maurizi found the glycerin too irritating.

86. **Operating in Advanced Stations.**—Pisano recommends a small portable barrack with equipment for surgical work, which can be packed complete in two trucks and set up close to the front wherever needed. He has long been advocating operations close to the firing line to spare the wounded the strain of transportation.

Policlinico, Rome

Aug. 4, 1918, **25**, No. 31

87 *Fracture of Neck of Femur. C. Ghillini.—p. 725.
88 Salivary Concretions. P. Amorosi.—p. 729.

August, 1918, **25**, Medical Section No. 8

89 *Osteoporosis after War Wounds. C. Guarini.—p. 225.
90 Appendicitis and Life Insurance. I. Romanelli.—p. 245.
91 Xylol in Treatment of Tuberculosis. G. Volpino, Colombino and Fornaroli.—p. 253.

87. **Fracture of Neck of Femur.**—Ghillini calls attention to the fact that as the patient with fractured femur reclines, the weight of the shaft drags down the distal stump of the neck so that it lies below the plane of the proximal stump. This of course prevents exact coaptation of the stump ends. It can be avoided, he says, by bracing the pelvis against some support, and then having the limb straightened by traction on the foot and leg. Measure the distance on the sound side from the anterior superior iliac spine to the greater trochanter, and the distance betwen these points on the side of the fracture. An assistant then, with one hand under the buttocks on the side of the fracture, raises the greater trochanter until the distance between it and the iliac spine measures the same as on the sound side. A strip of plaster is then applied passing from one side to the other of the thigh and leg, and made to adhere to the limb with strips of gauze. Then a cement and plaster cast is applied, enclosing the pelvis and reaching from the umbilicus to the knee. The assistant holds the limb in inward rotation while the plaster is hardening, which brings the fragments together. In his first case he worked under roentgen control, but found this superfluous, as the measurements alone answered every purpose. He applies extension by Volkmann's method, with a 5 or 10 kg. weight, keeping the stirrup fastened to the foot in inward rotation. The limb is thus immobilized for about fifty days. The fracture by this means heals in the correct anatomic relations. The only drawbacks with the method he found to be that others accused him of faking the roentgenograms of his cases, as no one would believe that such complete restoration of a fractured femur was possible. He reproduces four of them.

89. **Osteoporosis After War Wounds.**—Guarini relates how the roentgen rays showing osteoporosis after industrial accidents and war wounds have freed many persons from the stigma of simulation, as they revealed trophic changes in the bone responsible for the patient's complaints. The trouble may commence in from four weeks to four months after the injury. Osteoporosis is especially frequent after war wounds, and the early detection of the tendency is important from several standpoints. He suggests that the demineralization should be combated by dietetic measures, first making sure of normal conditions in the digestive tract. In some cases, organotherapy might also be considered. Electrotherapy and physical measures may improve the circulation in the limb and promote the nourishment of the periosteum and joint cartilage. Nineteen cases are described in detail, with illustrations. In one woman the lumbar spine was the seat of constant pains and tenderness, first explained by the osteoporosis revealed by the roentgen rays. Trophoneurotic influences after a war wound were evidently responsible in some cases. Guarini found a tendency to osteoporosis in from 25 to 50 per cent. of 3,500 roentgen examinations of the wounded. It was frequent in the small bones of the hand or foot after war wounds not far above, and in the elbow. Inflammation is evidently a factor, but long immobilization of the limb certainly cooperates.

Rivista di Clinica Pediatrica, Florence

August, 1918, **16**, No. 8

92 *Convulsions in Infants. C. Francioni.—p. 393.

92. **Convulsions in Infants.**—Francioni found that some of the infants under 3 months old who had convulsions developed afterward normally, some traumatic or circulatory disturbance from the birth process evidently having been responsible for the convulsions. In others, symptoms of spasmophilia became manifest later, or of inherited syphilis or of tuberculosis. Whatever the etiology, the convulsions were alike in all. It is manifest further that digestive disturbances may aid in bringing on convulsions with an inherited taint or from other cause, but the stage of the development of the nervous system evidently cooperates, before the third month and after the eighth month being the periods of greatest frequency of convulsions.

Gaceta Medica de Caracas, Venezuela

June 30, 1918, **25**, No. 12

93 Classification of a Distoma. J. M. R. Sierra.—p. 124.
94 *Chaulmoogra Oil in Treatment of Tuberculosis. J. G. Hernandez.—p. 127.
95 Pyrexias at Caracas. F. A. Risquez.—p. 128.

94. **Chaulmoogra Oil in Tuberculosis.**—Hernandez found that addition of 2 per cent. chaulmoogra oil to the culture medium always prevented development of tubercle bacilli. His experiments with it in guinea-pigs also seemed to confirm its destructive action on these bacilli. He gave small injections of the oil to six tuberculous patients. The best results were obtained with injection of not more than 1 or 2 c.c. at twenty or thirty days' interval. Under this all the symptoms subsided in some of the cases. In the discussion that followed, Rincones suggested that possibly this oil might render the waxy shell of the bacillus less resistant, so that then it might yield to serotherapy.

Revista de la Asociacion Medica Argentina, Buenos Aires

May, 1918, **28**, No. 162

96 Intestinal Lesions from Acquired Syphilis. Udaondo.—p. 375.
97 *Resection of Auriculotemporal Nerve in Treatment of Parotid Fistulas. A. Ceballos and A. G. Bacigalupo.—p. 395.
98 *History of Hygiene in Argentina. E. R. Coni.—p. 401. Cont'n.
99 *Antagonistic Action of Organ Extracts. B. A. Houssay.—p. 433.
100 Pancreatic Cysts. J. M. Jorge, Jr.—p. 440.
101 Gonococcus Peritonitis. R. A. Rivarola.—p. 478.
102 Polycystic Disease of Mammary Gland. N. Tagliavacche.—p. 484.

97. **Resection of Auriculotemporal Nerve in Treatment of Parotid Fistulas.**—The man of 36 was cured completely of a rebellious fistula into the parotid gland by resection of the auriculotemporal nerve to reduce the secretion of saliva. Similarly favorable results were obtained with this intervention also in two cases of cancer of the tongue and one of cancer of the esophagus. In the latter case the resection was bilateral. In all the cases there was immediate reduction in the flow of saliva but no other effects were apparent.

98. **History of Public Hygiene in Argentina.**—This is the fifteenth chapter of Coni's memoirs.

99. **Antagonistic Action of Pituitary and Suprarenal Extracts.**—Houssay presents charts and describes experiences which confirm that while pituitary extract usually reenforces and prolongs the action of epinephrin, on the bronchi, bowels and pupil it exerts an antogonistic action.

Revista de la Universidad de Buenos Aires

June-July, 1918, **38** and **39**, No. 135

103 *Ruptures of the Uterus. J. B. Gonzalez.—p. 161. Cont'n.
104 *Phlegmons of Broad Ligament. C. A. Castaño.—p. 219. Conc'n.

103. **Ruptures of the Uterus.**—The fifty-six pages of this instalment of Gonzalez' extensive thesis review the history and the literature on rupture of the uterus, and his own clinical experiences. Among 3,125 parturients in his service, rupture occurred in 1.91 per thousand of 1,562 Argentine women; in 2.83 per thousand among 707 women of Spanish race, and in 36.96 per thousand among 514 Italians, and yet contracted pelvis was relatively rare among the Italian women. Shoulder presentation was evidently a factor in the rupture in six of the Italian women.

104. **Pelvic Infections.**—Castaño gives here the minute details of his experimental work and research on the origin of and findings with phlegmon of the broad ligament, with thirty-three pages of bibliography, twenty-four fine photomicrographs and twenty-six handsome colored plates, besides other illustrations and thirty case histories, and the general conclusions as to the pathogenesis and pathologic anatomy of phlegmons of the broad ligament. A shorter communication by him on this subject was reviewed in these columns, July 13, 1918, p. 157, and his conclusions were there summarized.

Gann, Tokyo

July, 1918, **12**, No. 2

105 *Induced Cancroid in the Mouse. H. Tsutsui.—p. 17.
106 *Transplantation of Fowl Tumors. K. Yamamoto.—p. 22.
107 Tubal Embryoma. S. Ohno and H. Takaoka.—p. 24.

105. **Artificially Induced Tumors in Mice.**—Tsutsui applied to 259 mice Yamagiwa's method of inducing malignant proliferation of tissues by repeatedly painting them with coal tar. Only sixty-seven of the mice survived to the hundredth day, the others succumbing probably to intoxication from the tar as they licked the spot. A tumor developed in thirty-five of the sixty-seven surviving, that is, in 52 per cent. The microscope showed on continued application of the tar, carcinoma in sixteen and sarcoma in one of the animals, an average of 23.8 per cent. of the animals that lived more than 100 days. There is some chemical substance in the tar, he thinks, which must be incriminated in the development of the carcinomas, but mechanical injury must not be left out of account, as the spot of the application is often bitten by the animal, and there is further repeated irritation as the scar is lifted up for renewed painting with the tar.

106. **Transplantation of Fowl Tumors.**—Among the points brought out by Yamamoto's experiments with fifty-eight strains of fowl tumors and one of dog and of guinea-pig tumors, is that the arrest in the growth of a tumor and the resorption of an already completely developed tumor, and the failures in transplantation, must stand in some intimate connection with the sexual function of the animal in question.

Nederlandsch Tijdschrift voor Geneeskunde, Amsterdam

June 29, 1918, **1**, No. 26

108 *Puerperal Sepsis. A. A. H. Van den Bergh.—p. 1774.
109 Wind Shelter Tent for Sun Baths. C. M. Mol.—p. 1783.
110 Organization of Specialists. A. C. Van Bruggen.—p. 1784.

108. **Sulphemoglobinemia.**—Van den Bergh over ten years ago called attention to the presence of sulphemoglobin in the red corpuscles in certain cases. In a case recently encountered, the sulphemoglobinemia followed puerperal fever after a criminal abortion. The symptoms corresponded to those accompanying sepsis from anaerobic microbes. The skin turned a yellow or coppery color, while the nose, the fingers and toes and the mucosa looked blue. The scanty urine contained hemoglobin. Some of the women have recovered, but as a rule they die in a few days. The organs are found brownish, but the most striking finding is the apparent integrity of the sexual organs and peritoneum. In the case reported, the spectroscope showed lines typical for sulphemoglobin. It is possible that this has been mistaken for methemoglobin in some of the cases on record labeled methemoglobinemia. Methemoglobin is an ordinary derivative of hemoglobin, but sulphemoglobin is formed exclusively under the action of sulphuretted hydrogen. The discovery of sulphemoglobin in the blood will turn the scale in favor of sepsis rather than an intoxication. No one has succeeded in cultivating microbes from the blood in these cases. In the present case they had probably entered by way of the internal genitals but had not caused any local lesions. Proliferating in the blood, they attacked the hemoglobin.

Hospitalstidende, Copenhagen

July 10, 1918, **61**, No. 28

111 *Exophthalmic Goiter in Children. H. C. Gram.—p. 913.
112 *Micro-Tests for Iron. M. Claudius.—p. 930.
113 Present Status of Pyelography. F. Rydgaard.—p. 937. Cont'n.

111. **Exophthalmic Goiter in Children.**—Gram cites the literature on this subject, and especially in reference to the unusual growth in height in children with exophthalmic goiter. This disease is rare in children. Sattler could find records of only 184 children under 15 in 3,477 cases of exophthalmic goiter on record. At the same time it is not infrequent to encounter in girls approaching puberty some slight enlargement of the thyroid with mild nervous manifestations and tendency to tachycardia—evidently a pathologic exaggeration of the physiologic hyperthyroidism at this time. Holmgren in 1906 called attention to the excessive growth which occurs in these conditions. The growth seems to be whipped up, and the bones settle prematurely into a condition which normally would occur only four or five years later. The epiphyses become consolidated, so that growth has to cease after this spurt, the children not being exceptionally tall when they reach their majority. Gram here reports in detail three typical cases. The girls were harmoniously developed, with menstruation at 12. At 13, they were 13.5 and 10 cm. taller than the average for their age. There were no signs of acromegaly, unless this extra growth may be regarded as a lengthwise acromegaly.

112. **Micro-Tests for Iron.**—Claudius gives the details of a colorimetric and a titration micromethod for determination of iron in the blood or other fluid. The first is based on the transformation of the iron into soluble Berlin blue; the other on the combination of an iron oxid with soluble Berlin blue to form insoluble Berlin blue. An aqueous solution of Berlin blue is used for the color standard. The tint is proportional to the iron content; probably because the stain is a colloidal solution. Other colorimetric technics in vogue are unreliable as the stain becomes dissociated more and more into its colorless elements. This does not occur with a stain in colloidal solution. He comments on the importance of an exact micromethod for iron not only for chemistry in general but for clinical medicine. Only 0.10 c.c. of blood is required for either technic.

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THE LYMPHATICS OF THE DENTAL REGION *

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CHICAGO

In place of the usual review of the progress of dental science and art, in the year past, which is given in a chairman's address, your chairman has decided to present a report of the work done in the Histological Laboratory of the College of Dentistry of the University of Illinois in the last three years. Two years ago, at the Detroit session, the first of this work was reported to this section.

First, I want to say that the technical work has been done by Dr. Dewey, in my laboratory, and she has prepared the review of the literature.

THE LYMPHATIC SYSTEM

Schweitzer[1] deserves the credit of first demonstrating, by injection, the presence of lymphatic vessels in the dental pulp and peridental membrane. Our work has corroborated his results, and filled out some of the gaps in his findings, especially in showing through its entire extent the drainage from the dental pulp, and the course of the vessels in the infra-orbital and inferior dental canals.

To those who are not familiar with this field of work, it may be well to say a word in regard to the character of the lymphatic system. All the cells of the body are bathed in fluid with which, through metabolism, they are in vital reaction. This fluid passes out through the walls of the blood capillaries into intercellular or interfibrous spaces, from which it is collected into minute canals, or spaces, lined by endothelial cells. These are known as the lymph capillaries. From these the fluid passes into larger channels with delicate endothelial walls, and finally into large lymphatic trunks, some of which have walls similar to the veins. The fluid is finally returned to the blood circulation through a valve-guarded opening into the subclavian vein. Along the course of these channels are interposed many lymphatic glands or lymph nodes.

As a general statement, lymphatic vessels are present wherever connective tissue is found. As long ago as 1891, Foster[2] said, "Of all the varied functions of connective tissue perhaps the most important is this relation to the lymphatic system; in nearly every part of the body connective tissue serves as the bed or origin of lymphatic vessels." Failure to inject them cannot be taken as proof that lymphatic vessels do not exist in a given location. Because of their inaccessibility and the structural peculiarities of the tissues, the dental system has long resisted all attempts to demonstrate the presence of lymphatic vessels.

The difficulty of injecting lymph vessels, as compared with blood vessels, can be readily appreciated. In some places large lymph vessels can be found, and because of the rich, plexus-like anastomosis of the small channels, they can be injected backward. In the dental region, however, this is quite impossible because of their minute size and the delicacy of the walls.

In the dental region, the method employed consists in slowly and gently carrying the fluid into intercellular and interfibrous spaces and by careful massage, forcing it through the interlacing, plexiform channels. In this way the injecting fluid is made to follow the natural course of drainage of the area, and to a limited extent can be forced backward into the other lymph capillaries. If this is kept in mind, it will be easier to interpret the illustrations.

LYMPHATIC VESSELS OF DENTAL SYSTEM

I will now describe briefly the arrangement of the lymphatic vessels of the dental system as made out by previous workers and as shown in our work.

Sappey[3] describes and beautifully illustrates the lymphatic vessels of the mucous membrane of the mouth, cheeks and lips. He shows a very rich plexus of lymph capillaries in every connective tissue papilla of the mucosa. These are drained into a rich delicate network in the submucosa, passing downward over the buccal and lingual surfaces of the alveolar process, and at the reflection from the bone to the cheek, or the bone to the tongue, forming a wreathlike network. In the lower jaw, this wreathlike network is drained by a few efferent trunks: on the outside, passing from the median portion to a submental lymph node and from the lateral portion to the submaxillary and superficial cervical nodes; on the lingual side, near the median line a few efferent trunks pierce the floor of the mouth and pass to the submental node. At the posterior portion they anastomose with the vessels from the sides of the tongue and the pharynx and pass chiefly to the median nodes of the upper group of deep cervical nodes.

In the upper jaw the wreath lying between the maxilla and the reflection of the cheek is drained by a

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* Chairman's address, read before the Section on Stomatology at the Sixty-Ninth Annual Session of the American Medical Association, Chicago, June, 1918.

* Because of lack of space, this article is abbreviated in The Journal. The complete article appears in the Transactions of the Section and in the author's reprints. A copy of the latter will be sent by the author on receipt of a stamped addressed envelop.

[1] Schweitzer: Ueber die Lymphgefässe des Zahnfleisches und der Zähne beim Menschen und bei Säugetieren, Arch. f. mikr. Anat., 1907, 69, 207; 1909, 74, 927.

[2] Foster, Sir Michael: A Text-Book of Physiology.

[3] Sappey: Anatomie, physiologie, pathologie des vaisseaux lymphatiques considérés chez l'homme et les vertébrés, Paris, 1874.

few efferent vessels, most of which follow the facial vessels and reach the larger submaxillary nodes. On the lingual they run across the hard and soft palate and to the upper nodes of the deep cervical group, usually of the same side but anastomosing and often crossing to those of the opposite side.

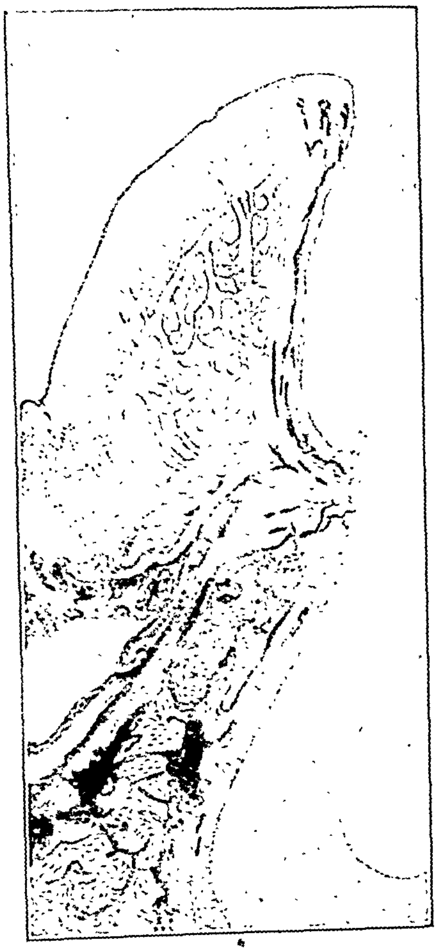

Fig. 1.—Unstained section, showing lymph capillaries of the tooth side of the gingivae and their drainage through the ligamentum circulare to the peridental membrane.

Sappey's description is confined, as far as the peridental membrane is concerned, to vessels lying to the occlusal of the ligamentum circulare.

I want now to emphasize the difference in the course of the lymphatic vessels from the papillae of the buccal and lingual slopes of the gingivae, as compared with the course of those from the long, slender papillae of the subgingival space (the side next to the tooth). As Sappey describes, the former do not penetrate the ligamentum circulare but pass down along the periosteum and to the wreathlike network at the reflection of the lip and cheek. The latter penetrate the ligamentum circulare and extend toward the apex of the root in the peridental membrane. Figure 1 shows the lymphatic capillaries of the papillae of the subgingival space, passing among the fibers of the peridental membrane close to the cementum, penetrating the ligamentum circulare and into the larger vessels coursing toward the apex of the root in the peridental membrane.

Figure 1 was drawn with the camera lucida from an unstained section. The results of this injection, as shown by this and other sections and as made out from careful dissection, may be described as follows: The needle was inserted under the periosteum well down on the side of the alveolar process, and the fluid slowly injected, with careful massage during and after injection. It will be seen that a lake was formed on the outside of the process from which the lymphatic vessels have carried the fluid through the spaces of the bone into the vessels of the peridental membrane. These have been filled in both directions, the fluid passing in them, occlusally and toward the apex. Occlusally it has passed through the minute vessels even into the ends of the papillae of the subgingival space. Passing apically, comparatively large vessels can be seen, as well as many small ones. Figures 2 and 3 were drawn from transverse sections of similar injections.

The connective tissue accompanying the blood vessels and nerves is seen to contain many injected lymphatic vessels. These continually anastomose with vessels in the spaces of the bone. At the apex of the root the vessels anastomose with lymphatic vessels which accompany the blood vessels through the foramina in the cementum into the dental pulp. Figure 4, which is cut transversely just at the apex of the root, shows one vessel passing from the pulp to the peridental membrane, and several cut transversely in other foramina. On reaching the pulp chamber, the lymphatic vessels are either perivascular or independent. The material seems to show that most of the larger blood vessels in the central portion of the pulp have perivascular lymph sheaths; but there are also good sized lymphatic vessels lined by endothelial cells independent of blood vessels. The latter seem to be chiefly toward the periphery of the pulp.

Figure 5 was drawn from a thick, unstained section. The injecting fluid has been forced out through lymph vessels into intercellular spaces in the pulp, and seems to be surrounding the odontoblasts. The coloring matter has even been dissolved into the dentinal tubules in some places. From this area small vessels may be seen uniting into a larger vessel. Several of these sections seem to indicate that the intercellular lymph spaces communicate with the dentinal tubules, and in this the experimental evidence corresponds with the clinical experience of discoloration of the dentin by the solution of blood pigments being carried into the dentinal tubules in infarction of the dental pulp.

The lymph vessels from the dental pulp pass through the apical space into the spaces of the bone, anastomosing with the rich lymphatic network in this tissue. The vessels pass to the periosteum, but drain to the inferior dental canal in the lower jaw and the infraorbital canal in the upper jaw. Here they form a rich plexus around the blood vessels and in the sheaths of the nerve trunks. Figures 6 and 7 are photomicrographs of these areas and show these vessels well injected.

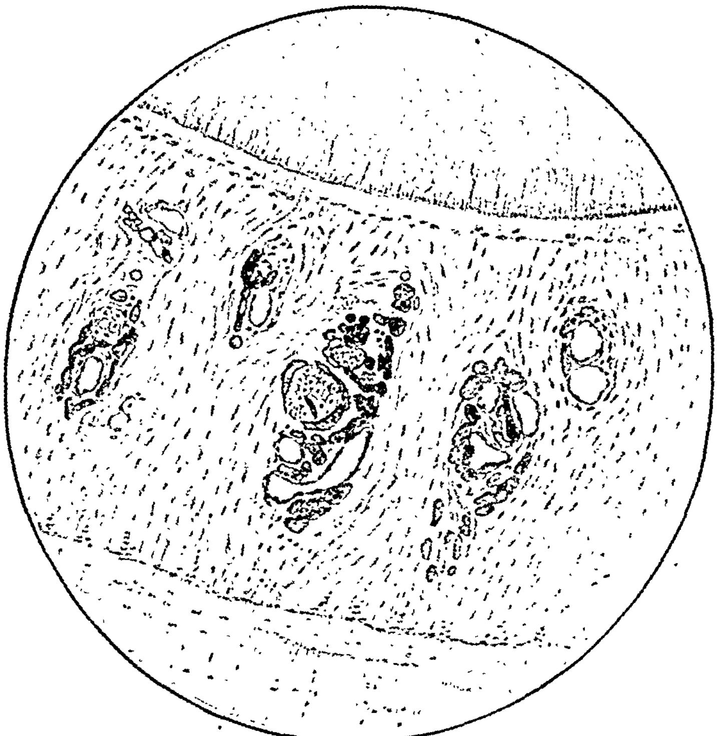

Fig. 3.—Transverse section of the peridental membrane, showing injected lymphatic vessels (oc., 3; obj., 16 mm.; reduced about one tenth).

The vessels pass out of the mental and infraorbital foramina, pass in a superficial course, and follow the facial artery and vein passing to the large submaxillary lymph nodes. Figures 8 and 9 are drawings of a head in which the vessels could be followed all the way from these foramina to the glands. In this head the only injections were into the pulps of the canines and first molars. Microscopic sections of the glands from similar specimens showed the injecting material to be in the lymph spaces of the glands.

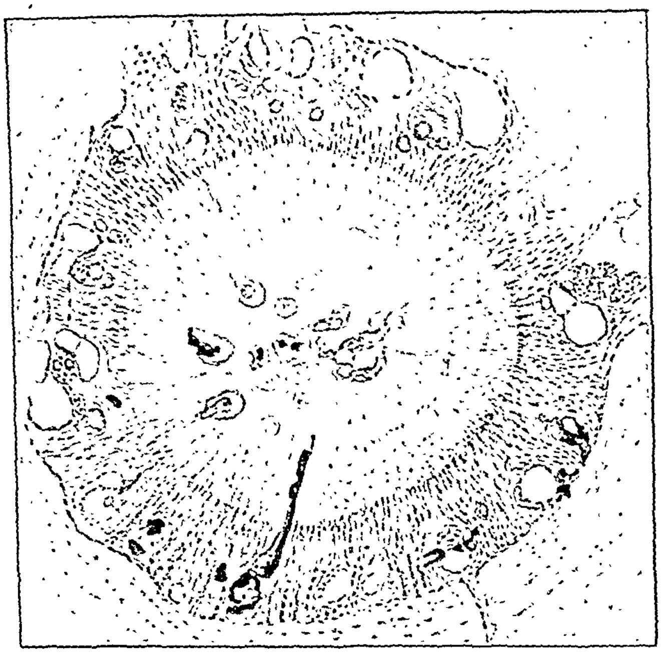

Fig. 4.—Transverse section just at the apex of the root, showing injected lymphatic vessels in the peridental membrane and in the canals passing to the pulp (oc., 2; obj., 16 mm.; reduced about one third).

Our work supplements that of Schweitzer in two important ways: first, in showing the injection of the lymphatic vessels in the inferior dental and infra-orbital canals, and so showing the complete course of drainage to the submaxillary nodes; and second, in showing the same course by injections only into the pulps of the teeth.

Subperiosteal injection of the lymphatics is especially interesting in reference to infiltration anesthesia, and the course of lymphatic drainage from the papillae of the subgingival spaces is especially important with reference to the progress of destructive inflammation of the peridental membrane.

REVIEW OF LITERATURE AND TECHNIC

The only report in literature of successful injection of the lymphatic vessels of the peridental membrane is one by Schweitzer,[1] who was also the first to demonstrate the presence of lymph vessels in the dental pulp. Other references about lymph vessels in the peridental membrane are limited to mere suggestions and the assumption that they may exist. Ebner[4] describes as structures belonging to the lymph system reticular meshes filled with lymphoid cells, which may be found embedded within the dense fibrous tissue about the teeth. Black[5] referred to nests of nucleated cells in the peridental membrane near the cementum as "lymphatic" glands. In later publications he modified this view to the effect that these cell collections may be glandular structures. Dorendorf,[6] who made a study of the lymphatic circulation of the lip with reference to the spread of carcinoma, extended his experiments to injections of the lymph vessels of the gingiva and the periosteum, but only brief protocols of the results of the injections are given, because, as he states himself, complete specimens could not be obtained.

The lymphatics of the gingiva are better known. Sappey[7] gives a clear picture of the arrangement of the lymph system in the gingiva and the palate, but fails to refer to any lymph vessels in the peridental membrane, while he mentions unsuccesssful attempts to demonstrate lymph vessels in the dental pulp and does not hesitate, in spite of failures, to express his belief that they may exist.

The older method of injecting lymph vessels with mercury which has yielded excellent results in such skilful hands as Sappey's, has been largely superseded by methods employing less heavy injection masses, and it is most likely due to the greater power of penetration of the more fluid masses that lymph vessels could be demonstrated which failed by mercury injection methods. The mass in most common use now is the so-called Gerota mass, Prussian blue or Berlin blue in the oil color, dissolved in turpentine oil and sulphuric ether. With this mass and a method known as the Gerota method, Schweitzer was able to inject successfully the lymph system of the peridental membrane and to a less complete degree lymph vessels of the dental pulp. The general picture of the lymphatic arrangement in the peridental membrane, as Schweitzer expresses it, is that of a funnel extending from the deepest layers of the gingiva down into the alveolus. The walls of this funnel lying in the peridental membrane consist of a dense network of lymph capillaries in several layers, anastomosing with one another. The main trunks, which arise from this network and which are larger than the blood vessels, run in a direction longitudinal to the axis of the tooth. They communicate with one another by numerous anastomoses. At the level of the ligamentum circulare,

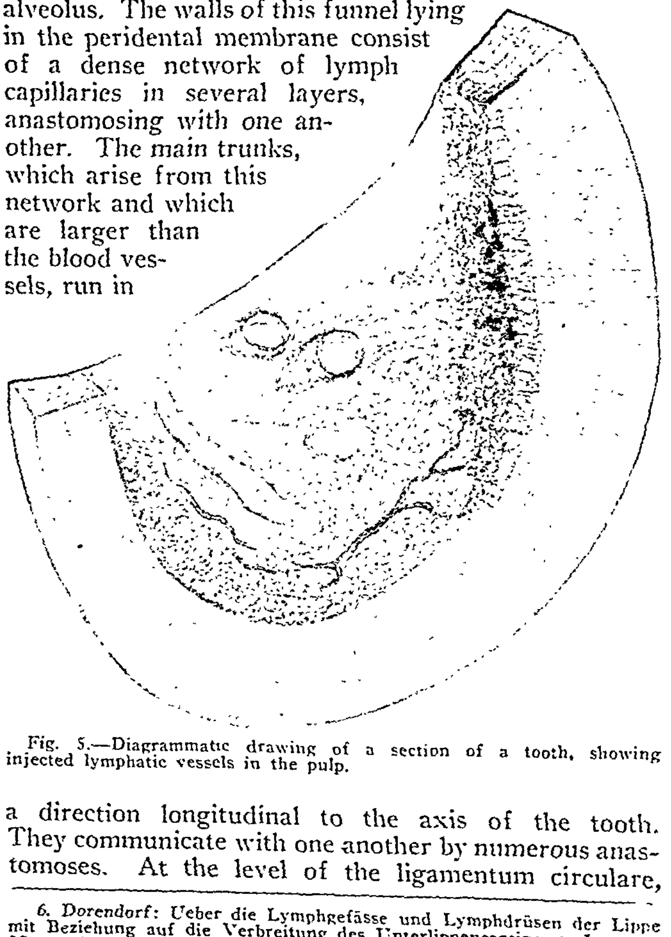

Fig. 5.—Diagrammatic drawing of a section of a tooth, showing injected lymphatic vessels in the pulp.

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[4] Ebner: Weichgebilde der Zähne, Scheff's Handbuch der Zahnheilkunde, Vienna and Leipzig, 1909, **1**, 269.

[5] Black: A Study of the Histological Character of the Periosteum and Peridental Membrane, 1887.

[6] *Dorendorf*: Ueber die Lymphgefässe und Lymphdrüsen der Lippe mit Beziehung auf die Verbreitung des Unterlippencarcinoms, Internat. Monatschr. f. Anat. u. Phys., 1900, **17**, 201.

[7] Sappey (Footnote 3), p. 69.

lymph vessels are present in several rows which surround the tooth like a wreath. The vessels ascending from this assume the form of lacunae and round masses, which in sections have the appearance of bunches of grapes. Numerous anastomoses connect the lymph vessels of the peridental membrane, first, with the neighboring larger lymph vessels passing through the bone; secondly, at the inlet of the alveolus with the deep lymphatic network of the gingival submucosa, and thirdly, at the apex of the root with the lymph vessels accompanying the larger blood vessels entering and leaving the dental pulp and therefore also with the lymph paths of this organ. In the lower jaw they communicate also with the lymph vessels which follow the blood vessels and nerves within the mandibular canal.

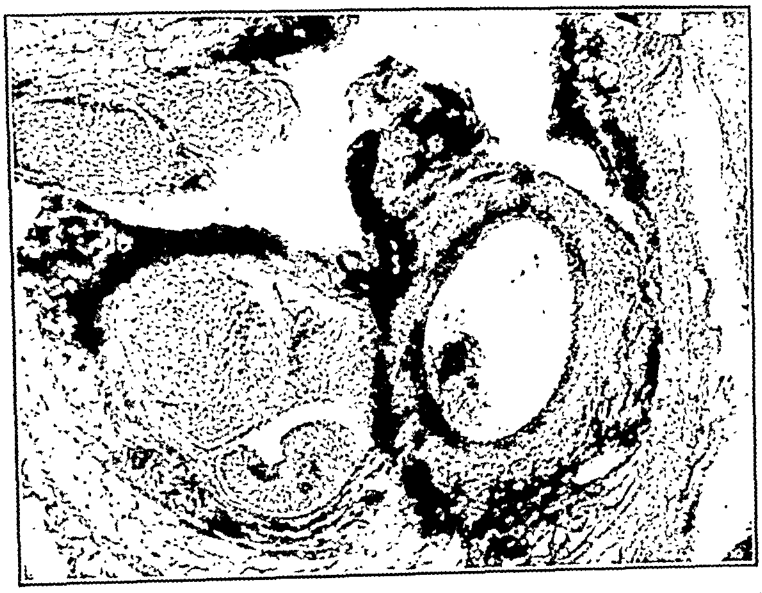

Fig. 6.—Photomicrograph, showing injection of perivascular and perineural lymph spaces in the vessels of the inferior dental canal.

The lymph vessels of the gingiva have been successfully injected by several investigators. Sappey was the first to demonstrate them, and the accuracy of his statements has been, in the main, verified by the results of later workers. After having described the lymphatic apparatus of the gingiva, he expresses the view that one should expect the dental bulbs, which are actually nothing else than papillae of the mucous membrane, to be provided with lymph vessels like all other papillae of the integuments. In fact, in spite of his failures to inject them, in the adult, the child and the fetus, he is still inclined to believe in their existence. According to Sappey, the vessels of the gingiva passing between the teeth unite into one vessel on either side on each jaw, and in the region of the last molar pass down into the deeper tissue. Most[8] admits the efferent vessels apparently are relatively scanty in number, but he believes that they are more numerous than Sappey claims; their demonstration by injections is difficult because the lymph capillaries in this region are extremely delicate, conforming to Teichmann's law that (so-called) lymph capillaries decrease in size and width the more delicate the mucosa is and the more the latter adheres to the subjacent tissue. Most was generally able to inject one, two and three trunks.

An interesting exception to another general principle laid down by Teichmann, known as Teichmann's rule, has been observed by Schweitzer to occur exclusively in the gingiva. According to this rule, the last terminals of the lymphatic apparatus always lie deeper, that is, more centrally than the blood capillary network. In the gingivae we find the reversed condition. Schweitzer admits that he is unable to explain the purpose of this exceptional arrangement. This investigator has made the most extensive practical study of the lymph system of the tissues about the dental apparatus. By using several coloring masses for injecting the different portions, he attempted to ascertain the regional drainage of the lymph from the gingiva and the teeth.

The following is a summary which Bartels[9] has given of the results obtained by Scwheitzer: The gingiva contains an extremely delicate, fine meshed network from which lymph vessels arise, which partly pass outward, and partly continue their course inward. The outer drainage paths collect in plexuses which surround the two halves of the jaw like a wreath along the upper and lower fold of the mucous membrane of the cheek, and form median anastomoses. From the plexuses numerous twigs pass from all parts of the alveolar processes along the vicinity of the anterior fascial vein to all submaxillary glands. In rare cases also the submental glands have been injected from the region of the four lower incisors (one case each of Schweitzer, Dorendorf and Polya and Navratil[10]). The inner drainage pathways originate as the outer ones. Those of the upper jaw differ in their course from those of the lower jaw. The former pass through the mucosa of the hard palate and from the lateral end of the alveolar processes over the soft palate and the pharyngeal wall downward and enter directly into the deep cervical glands. Generally they empty into the glands of the same side, but not rarely they cross and pass into the corresponding glands of the opposite side. The inner drainage pathways of the mandibular gingiva pass from the region of the incisors along the lingual surface of the jaw through

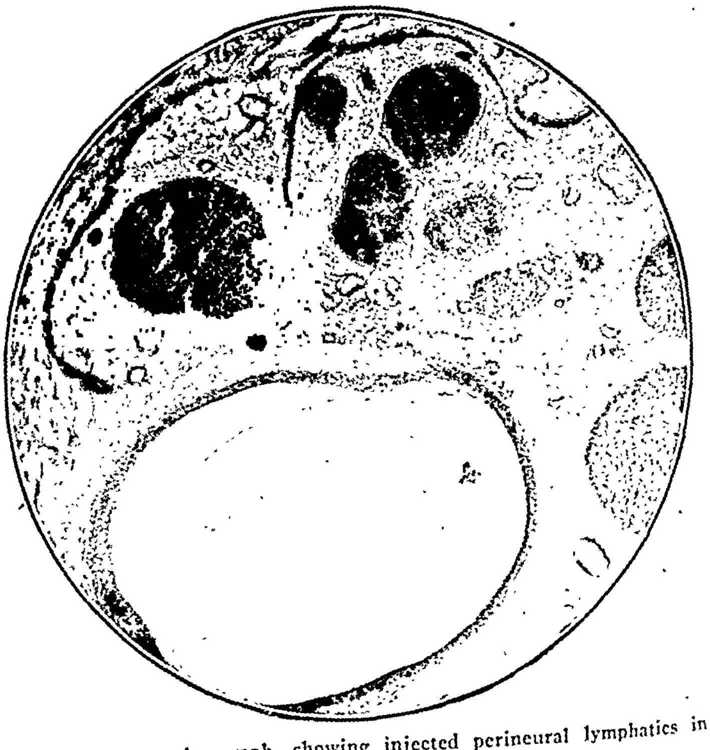

Fig. 7.—Photomicrograph, showing injected perineural lymphatics in the infra-orbital canal.

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[8] Most: Die Topographie des Lymphgefässapparates des Kopfes und des Halses, in ihrer Bedeutung für die Chirurgie, Berlin, 1906, p. 98.

[9] Bartels: B[illegible] der Anatomie des Menschen, 1909, 3, Part 4, [illegible] über die Lymphbahnen der

[10] Polya and [illegible] Wangenschleimhaut, Ztschr. [illegible] 3, 66, 122.

the mylohyoid muscle to the anterior submaxillary gland, and from all regions along the transitional fold to the deep cervical glands.

As to the pathways draining the teeth, Schweitzer admits that he has not reached complete and final issues; some conclusions are still represented as "probabilities." He says:

> As lymph paths from the teeth of the upper jaw, at least for part of them, we may consider as very probable, lymph vessels which emerge from the infra-orbital foramen or smaller secondary openings to the outer surface of the maxilla and pass to the submaxillary glands (media and posterior). In the lower jaw the lymph flows through rami dentales into lymph paths which course within the mandibular canal. Although it has hitherto not been possible to follow the latter vessels to their terminal passage into a lymph gland, we may assume, from analogy of the inner drainage of the gingiva, that they empty into the deep cervical glands or in part to the submaxillary glands.

As we shall show later, we can verify the correctness of this supposition; we have succeeded in injecting these lymph vessels in their entire passage from their exit at the infra-orbital and the mental foramen to their entrance into the submaxillary glands (Fig. 8).

The accompanying table is one set up by Schweitzer, which shows the drainage of the different regions of the gingiva, demonstrated chiefly by the results of injections with differently colored injection masses. Although he warns that separation of the glands according to regional sources be made only with some caution, because of the possibilities of the anastomoses, he assures that clinical experience is entirely in accord with his experimental evidences. Of particular interest are the extensive statistical observations of Partsch[11] and Ollendorf[12] about the swelling of lymph glands in morbid conditions.

This picture of the lymph system of the gingiva, the peridental membrane and the dental pulp will be more complete if it is seen in its relation to the blood supply. Wedl[13] was the first to demonstrate and accurately describe the location, general arrangement and course of the blood vessels in this region. Schweitzer has added some interesting features, especially about the vessels of the dental pulp. At the apex, between the dense fibers, we find a loose connective tissue which surrounds the larger vessels and nerves. Such loose interstitial connective tissue also fills the spaces between the bundles of fibers of the peridental membrane, in which course the numerous blood vessels which ascend from the depth of the alveoli toward the gingiva. These vessels communicate with the vessels of the pulp, with those of the medullary spaces of the alveolar wall and with the vessels of the gingiva. Near the surface of the tooth there are long capillary loops; these become narrower toward the apex of the tooth and the neck of the tooth. The arrangement of the capillaries in the peridental membrane is quite unique. Both Wedl and Schweitzer describe peculiar round tufts of loops which Wedl was the first to compare with the glomeruli of the kidney, a resemblance which Schweitzer emphasizes in his illustrations, in which an actual connective tissue capsule around these tufts can be distinctly seen. Besides these singular formations there are capillary loops "en palissade." The peculiarity of this vascular arrangement is explained as a conformation due to unusual functional demands on a tissue of such structural and physiologic significance as is the case of the peridental membrane.

REGIONAL DRAINAGE OF LYMPH VESSELS (OUTER LYMPH PATHS)

From the Region of:	Upper Jaw into Submaxillary Lymph Glands			Lower Jaw into Submaxillary Glands		
	Anterior	Median	Posterior	Anterior	Median	Posterior
Incisors and canines	Only exceptionally one vessel	About ⅚	Almost ⅙	About ⅔	About ⅓	Occasionally
Premolars	0	About ⅔	About ⅓	Rarely one vessel	Almost all	0
Molars	0	Almost ½	A little more than ½	Occasionally one vessel	Almost all	Occasionally one vessel

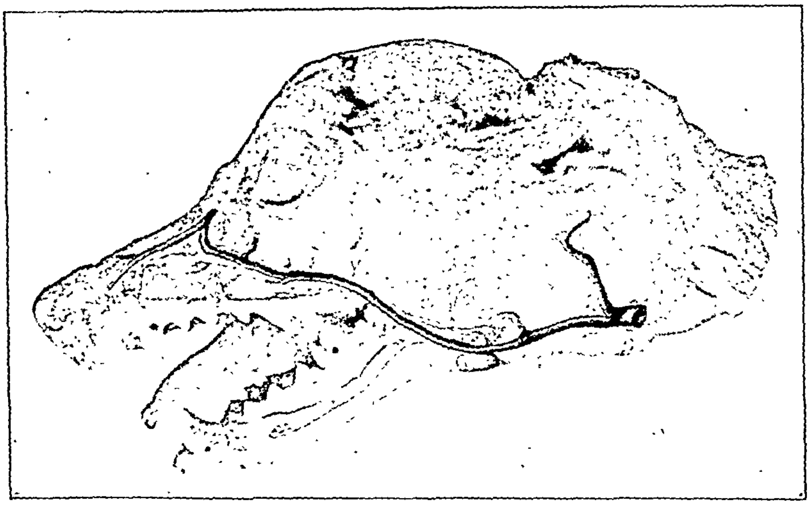

Fig. 9.—Drawing of dog's head showing injected lymph vessels from the infra-orbital and mental foramina to the submaxillary lymph nodes.

As to the dental pulp, Schweitzer insists that the number of vessels is greater than is usually given. The arteries entering the pulp divide into several parallel branches, which run toward the coronal extremity, giving off lateral branches mostly at right angles. These minute twigs form a precapillary network from which a very fine capillary network arises, located at the surface of the pulp between the odontoblasts. There are analogous venous networks; the veins leaving the pulp chamber are larger in number than the arteries. Being compressed at the apical foramen, the vessels in passing out spread out in rays, or fanlike. Even when still within the pulp cavity at the foramen where there is only cementum, divisions of the pulp vessels may branch off at obtuse or right angles, and pass through the cementum to gain the peridental membrane. De Saran[14] asserts that he has seen this very frequently.

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[11] Partsch: Erkrankungen der Zähne und Lymphdrüsen, Odontologische Blätter, 1899; Ein Beitrag zur Klinik der Zahnkrankheiten, Oesterr. Ztschr. f. Stomat., 1903. Die Zähne als Eingangspforte der Tuberculose, Deutsch. med. Wchnschr., 1904, **30**, 1428.

[12] Ollendorf: Ueber den Zusammenhang der Schwellungen der regionären Lymphdrüsen zu den Erkrankungen der Zähne, Ztschr. f. Zahnheilkunde, 1898.

[13] Wedl: Pathologie der Zähne, 1870, p. 37. (The later record by Metnitz and Wunschheim, Leipzig, 1901, **1**, is not accessible.)

[14] De Saran: Vaisseaux sanguins des racines dentaires, Gaz. méd. de Paris, 1880, No. 48, p. 736.

In previously published work[15] we reported that we have indisputably demontrated that the lymph vessels of the dental pulp can be injected, not only in a retrograde direction by way of the gingiva, as Schweitzer did, but also by forcing the injection mass through the tooth directly into the exposed pulp tissue. The first investigation was limited to a study of the lymph supply of the pulp. The purpose of the present work was to follow the course of the outflowing vessels, to examine the extent of their communications with neighboring tissues, and to study their course in the mandibular and infra-orbital canals: in short, to fill out some gaps left in Schweitzer's results.

ABSTRACT OF DISCUSSION

Dr. Eugene S. Talbot, Chicago: Twelve years ago Dr. Latham and I did some work on dental pulp, but not in relation to the lymph channels. We were astonished at that time because of the large number of abscesses that form in the dental pulp. It is almost impossible to believe that abscesses form in the dental pulp without causing any pain, and later heal up, which naturally would show that there must be lymphatics connected with the dental pulp. It was not until Dr. Rosenow showed how the streptococcus travels through the blood stream into different parts of the body that it was fully explained how these germs pass through the ends of the roots into the dental pulp and form abscesses. We have on record one case, which was a wonderful illustration of the abscess theory. This pulp shows an abscess forming, another one healing and one practically ripe with the pus inside of it, showing the different changes that had taken place from the time of infection to the healing of the abscess in the dental pulp. If one makes a study of the dental pulp with a view to looking into this abscess formation, he will find a great many scars in the dental pulp where abscesses have formed and healed.

Dr. Edward H. Hatton, Chicago: These pathologic changes which are found about the gingivae and in the regions adjacent to these pus pockets can be explained in no other way than by the presence of lymphatics in the peridental membrane leading down along the teeth and into the pulp cavity.

Dr. Herbert A. Potts, Chicago: Aside from the histologic and anatomic interest of these studies, the demonstration explains many of our brilliant successes and many of our failures in the induction of local anesthesia. Two years ago Dr. Noyes told us the difficulty by which these injections were attended. I am sure that most of my success is due to the technic of the injection itself. Only by slow, steady injection do you obtain results.

Dr. Frederick B. Noyes, Chicago: I think you will find that this work has a bearing not only on local anesthesia but on the whole realm of dental pathology, especially the destructive inflammations which have their origin in the gingival spaces.

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[15] Noyes, F. B., and Dewey, K. W.: A Study of the Lymphatic Vessels of the Dental pulp, Dental Cosmos, 1917, **59**, 436.

Reeducation of French War Cripples.—It was recently estimated that France had 300,000 disabled soldiers, with a monthly increase of between 6,000 and 7,000. They are cared for in national centers of physiotherapy, of which there is one for each of France's twenty military regions. To these centers are attached schools or workshops which the cripples may attend for purposes of reeducation. Independent of the centers, there are also civil schools for vocational reeducation, supported by both public and private funds; and finally there is the National Institute near Paris under the joint direction of the Ministries of War and of the Interior, with a well equipped military hospital, together with workshops and dormitories. Almost universally the "boarding-in" system prevails, that is, the soldier lives at the school and is under its direct discipline during his period of training.

FURTHER EXPERIMENTAL STUDY OF SURGICAL SHOCK *

F. C. MANN, M.D.
ROCHESTER, MINN.

A review of the results obtained in the extensive amount of work that has been done on the problem of shock, both experimentally and clinically, makes the point I have repeatedly emphasized particularly clear, namely, that the condition the surgeon calls shock may be due to a variety of causes.[1] The variation in the primary etiologic factor in a condition in which identical clinical symptoms occur is probably the cause of the more or less contradictory conclusions arrived at by investigators, both experimentally and clinically.

The value of experimental work on surgical shock is certainly decreased by the fact that it is impossible to reproduce the experimental environment, and the condition itself, in a manner identical to its clinical manifestation. From the results of a large series of experiments I am forced to conclude that the experimental investigator approaches, in only a few specific types, the condition that the surgeon studies clinically.

The future work on the subject termed shock will, in all probability, not concern itself with the condition as an entity, but with the different possible etiologic factors that could produce the clinical picture the surgeon has in mind. Two excellent examples of this form of research on the problem have recently been presented. They are the relation of fat emboli to conditions diagnosed as surgical shock, as shown by Bissell[2] and by Porter,[3] and wound shock of Cannon[4] and his coworkers. While in neither case have all the factors involved been explained, the positive fact that cases which the surgeon diagnoses as shock may be classified is of the greatest importance.

There is, I believe, one general statement that can be made to include all cases clinically diagnosed as shock, namely, that the fundamental cause of death in each instance is a failure of physiologic compensation. From the therapeutic standpoint one of the most important problems to solve in connection with shock is to determine why some persons fail to compensate for the various procedures to which they are submitted.

I have discussed in a previous paper[5] the effect of the anesthetic in relation to shock, but the anesthetic is of so much importance, both in experimental and in postoperative shock, that its effect should be emphasized. Recently, while performing some experiments, I found that a low blood pressure was produced invariably within an hour or two after the beginning of anesthesia, regardless of the experimental procedures employed. These results were proved to be due to impure ether. Careful experiments in anesthetic control should always be performed before it is concluded that an experimental procedure produces the symptoms of shock.

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* From the Mayo Clinic.

* Read before the Section on Pathology and Physiology at the Sixty-Ninth Annual Session of the American Medical Association, Chicago, June, 1918

1. Mann, F. C.: The Peripheral Origin of Surgical Shock, Bull. Johns Hopkins Hosp., 1914, **25**, 205-212.
2. Bissell, W. W.: Pulmonary Fat Embolism—A Frequent Cause of Postoperative Surgical Shock, Surg., Gynec. and Obst., 1917, **25**, 8-22.
3. Porter, W. T.: Shock at the Front, Boston Med. and Surg. Jour., 1916, **175**, 854-858.
4. Cannon, W. B.: A Consideration of the Nature of Wound Shock, The Journal A. M. A., March 2, 1918, pp. 611-617.
5. Mann, F. C.: Shock During General Anesthesia, The Journal A. M. A., Aug. 4, 1917, pp. 371-374.

THE RELATION OF THE NERVOUS SYSTEM TO SHOCK

The relation of the nervous system, as a primary agent, to the condition which the surgeon diagnoses as shock is not clear. It is quite probable that the nervous system is a primary etiologic factor in some cases, particularly in those in which an anesthetic has not been employed. There are no experimental data extant in which such a relationship has been proved beyond a doubt. The results of numerous experiments that I have performed under light ether anesthesia have been, with the few exceptions previously recorded, uniformly negative. It certainly is possible to stimulate, either electrically or mechanically, one or all of the major nerves going to the limbs, for example, the sciatic and brachial plexus of a dog under constant surgical ether anesthesia, for as long as four hours, without producing the condition of shock. It should be emphasized that the marked fluctuation in respiration and blood pressure that occurs following such stimulation is not shock, and shock can be said to have occurred only when the cardinal signs of the condition are present at the end of the period of stimulation. In my experiments this has not occurred, but both respiration and blood pressure have quicky returned to approximately the normal condition. The same phenomenon follows section of the major nerves. Whether or not much reaction follows such a procedure depends mainly on the depth of the anesthesia. Under light anesthesia, section of the sciatic nerves and the brachial plexus produces marked changes in respiration and blood pressure; when deep anesthesia is employed, section of these nerves may produce only the slightest response in respiration or blood pressure. In either case shock does not follow section of the nerves. We have observed animals which, under light anesthesia, have had a normal blood pressure eight hours after section of the major nerves to each limb (Fig. 1). I am inclined to believe that, in most instances in which the primary factor is the nervous system, the cause will be found to be of the nature of inhibition, as held by Meltzer.[6]

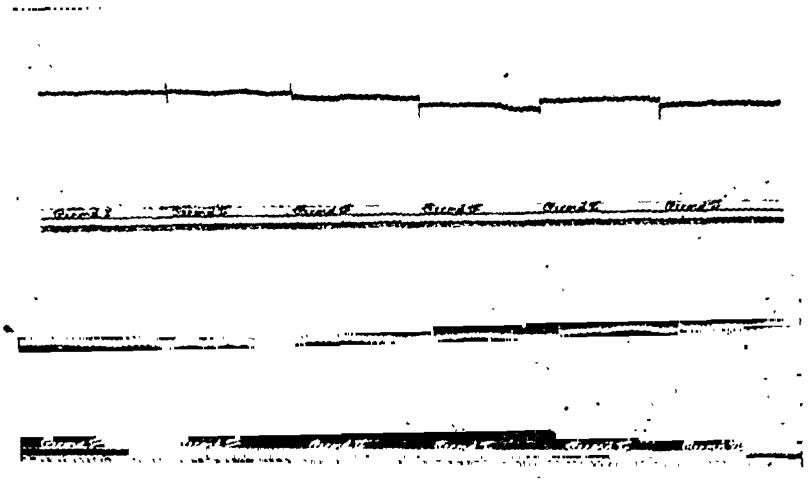

Fig. 1.—Kymograph record illustrating (1) an anesthetic control experiment and (2) the effect of section of the major nerves to each limb; Record I, normal blood pressure (140); Record II, immediately after exposing the sciatics and brachial plexuses; Record III, immediately after section of both sciatics and brachial plexuses. Each succeeding record was taken at intervals of an hour; thus, Record XII was taken nine hours after section of the nerves, and the blood pressure was 145.

Under only two conditions have I been able to produce death by nerve stimulation. One condition was produced by stimulating the nerve fibers that inhibited respiration when the animal was under deep anesthesia. Ether anesthesia seems to depress, and, when the tension is great enough, abolishes all respiratory reflexes except one before respiration ceases. The reflex that it does not abolish before the respiratory center fails is the one that inhibits respiration. Instead of ether depressing this reflex, it is quite common for its action to be increased. Under deep etherization it is possible, in many instances, actually to kill the animal by prolonged stimulation of nerve fibers that inhibit respiration. The stimulation of some nerves, as the central end of the vagus and the superior laryngeal, usually inhibits respiration for a short period. As the stimulation is continued, however, respiratory movements soon return, owing either to a decrease in the reflex or, what is more probable, to an increase in the chemical stimulation of the nerve center. It is rarely possible, under light surgical anesthesia, to inhibit respiration by the stimulation of these nerves for a long enough period to jeopardize the life of an animal. As the ether tension is increased, the length of time the respiratory movements are inhibited is prolonged. Finally, in a large number of cases, under deep etherization, respiration fails to return, and blood pressure quickly falls, death ensuing. In other cases, while respiration is always inhibited for a time, recovery occurs. In the earlier experiments the blood pressure was usually decreased, as much as one-half the normal pressure, before respiration could be inhibited long enough to produce death. However, it was found that by cautiously increasing the ether tension, many animals could be killed while the blood pressure was practically normal. The method of administering the anesthetic does not seem to be a factor in producing death. In most of our experiments the Connell[7] apparatus was used, in some instances a modification of McGrath's[8] method, while in still others only the cone method was used. While it is possible that death in these cases may be due to factors other than the inhibition of respiration and asphyxia, there is no evidence to show it. I have never been able to obtain this result by stimulating nerves that did not inhibit respiration. Death will not occur while insufflation or artificial respiration is maintained, if the ether tension is not above that compatible with life. Death under deep etherization has not been produced except in connection with inhibition of respiration. The process producing death in such experiments seems to be as follows:

For some unknown reason, ether does not abolish reflexes that inhibit respiration as long as the respiratory center responds. Under deep etherization the threshold of the cells of the respiratory center is greatly increased to the chemical stimuli. A point is thus reached at which the center will respond to the inhibitory reflex, and not to the increased carbon dioxid in the blood. At this time the stimulation of inhibitory fibers will produce death, and, owing to the deep etherization, quite quickly in many instances. Attempts have been made to produce the same result by both methods of stimulating the nerves other than by electricity or deep etherization. To date, however, all attempts have failed (Fig. 2).

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[6] Meltzer, S. J.: The Nature of Shock, Arch. Int. Med., July, 1908, pp. 571-588.

[7] Connell, K.: An Apparatus—Anaesthetometer—for Measuring and Mixing Anesthetic and Other Vapors and Gases, Surg., Gynec. and Obst., 1913, **16**, 245-255.

[8] McGrath, B. F.: Anesthesia in Surgical Research, Surg., Gynec. and Obst., 1914, **18**, 376-377.

It has been thought for a long time that inhibition of the heart, due to stimulation of the vagus, might produce death in mammals, and it has also been suggested that a reflex producing inhibition of the heart might also end fatally. In a few instances in this series of experiments such a result seems to have been produced. However, to the present time, death, owing to apparent reflex inhibition of the heart, has not been produced by stimulation of any nerve except the superior laryngeal, although it would seem that the central end of one vagus with the other intact would be effective. As this reflex disappears under deep etherization, it appears that death could occur only by reflex inhibition of the heart under light anesthesia. Such was the case in these experiments (Fig. 3).

What practical bearing such experiments have on the shock problem cannot at present be stated. Death is produced so suddenly and so strikingly under these conditions that it seems highly probable the same thing has occurred in man. It is quite possible that deep etherization and inhibition of respiration during the time in which operations are being performed in the region of the neck, axilla and diaphragm (regions in which traumatic procedures are prone to produce stoppage of respiration) are responsible for some of the sudden deaths on the operating table that the surgeon has diagnosed as due to shock.

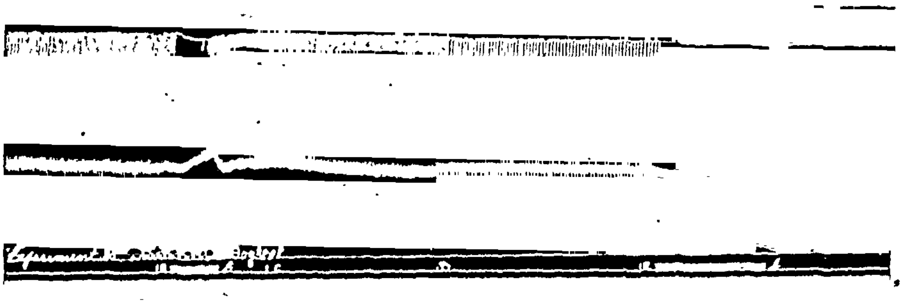

Fig. 2.—Kymograph record showing the effect of stimulating the central end of the vagus [illegible] anesthesia. Normal blood pressure was 115. At signal *a*, [illegible] and the control end of the left vagus was stimulated at *b* until respiratory movements returned. During the interval *D* (sixteen minutes) ether tension was increased. At *a* the ether was discontinued, and at *b* the vagus was again stimulated, and death occurred.

THE RELATION OF FLUID VOLUME TO SHOCK

The conception that in most of the cases which the surgeon diagnoses as shock the patients are in a pathologicophysiologic state, in which the cause of the symptoms is a loss of circulatory fluid, has been adversely criticized, because of the clinical distinction that is made between hemorrhage and shock. This has been due, I believe, to a failure to consider the fundamental likenesses and differences between the two conditions.[9] The symptoms of this form of shock and of hemorrhage are, in the main, due to the loss of circulatory fluid. In general, after hemorrhage, the vascular system is capable of functioning, and the mechanism controlling fluid volume is able to at least partially compensate for the loss. In the condition of shock, however, not only is there a loss of circulatory fluid, but the mechanism which controls fluid volume is also, and possibly primarily, greatly impaired. That is the reason why, in the former condition, intravenous injection of salt solution is of distinct value, while even the so-called colloidal solutions do not remain long in the circulation in the latter condition.

Janeway and Jackson[10] have shown that a circulatory failure, which presents the typical signs of shock, may be produced in dogs by a partial occlusion of the inferior vena cava at its point of entrance into the thorax. This has been corroborated by other investigators.[11] It seems that, for the most part, the result is due to the effect of the occlusion on the portal circulation and the liver, because it is well known that ligation of the inferior cava at a point just below the entrance of the hepatic veins is a perfectly safe surgical procedure in most dogs. The collateral venous return is such that a ligature thus applied does not produce any of the symptoms of shock. The ligation of the portal vein will always cause death in a few hours. Even partial occlusion of this vein, as sometimes occurs in a badly made Eck fistula, will produce death in a couple of days.

In a recent series of experiments, I have attempted to determine the relation of the volume of capillary and venous beds to the signs of shock. Only a brief preliminary report can be made of these experiments. The method consisted in including in a strong ligature all the structures to each limb except the major artery. In this manner the major artery was allowed to pump blood into the limb, from which all venous and lymph return was obstructed. The results of a sufficiently large series of experiments are in general agreement. The first effect of such a procedure is a slight and ordinarily transient rise in blood pressure. The blood pressure, as a rule, soon decreases and at the end of two hours it has only about half its initial value. At this time the animal generally exhibits the signs of shock. If the ligatures are then removed, recovery usually takes place. When the ligatures are left on for a long period of time, there may be an initial rise in pressure following their removal, but it subsequently decreases. When the ligatures have been applied for a very long period, the removal produces a further drop in blood pressure, and eventually, death. To a lesser degree these results may be obtained when only three limbs are used. From the results of such experiments it would seem that a condition producing stasis in a large capillary field would produce the signs of shock. It should be emphasized that simple vasomotor dilatation will not cause this condition. Section of the nerve supply to all the limbs does not produce the signs of shock (Fig. 1).

THE TREATMENT OF SHOCK

The treatment of shock may be divided into: (1) general measures, (2) the use of drugs, (3) attempts to restore the fluid volume, and (4) special measures. In studying any form of treatment of shock experimentally, it is necessary carefully to standardize the experimental procedures. In this series of investigations the routine method of experimentation was as follows:

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[9] Mann, F. C.: Shock and Hemorrhage: An Experimental Study, Surg., Gynec. and Obst., 1915, **21**, 430-441.

[10] Janeway, H. H., and Jackson, H. C.: The Distribution of Blood in Shock, Proc. Soc. Exper. Biol. and Med., *1914-1915*, **12**, *193-197*.

[11] Erlanger, Joseph; Gessell, Robert, and Gasser, H. S.: An Experimental Study of Surgical Shock, The Journal A. M. A., Dec. 22, 1917, pp. *2089-2092*.

The animal (dog) was etherized in a closed cabinet, intubated, and a constant surgical anesthesia maintained by means of the Connell apparatus. The carotid blood pressure was recorded with a mercury manometer. Marked changes in the temperature were prevented by the judicious use of an electric pad. After a normal record had been obtained, the abdominal viscera were exposed and gently sponged, about every fifteen minutes, with dry gauze. When the blood pressure had decreased and remained rather stationary at the desired point, which occurred usually from about one to two hours after exposure of the viscera, the viscera were returned to the abdominal cavity and the wound was repaired. After waiting a sufficient length of time to determine definitely that the blood pressure did not increase, the procedure designated to improve the condition of the animal was instituted. The blood pressure was taken as a criterion of the condition of the animal because it is the easiest indication to record and compare. It should be emphasized that the anesthetic was constant throughout the experiment. This removes the possibility of the ether producing an error in either the interpretation of the blood pressure record or the general condition of the animal. Careful anesthetic control experiments were performed, the etherization being maintained at the same tension and for a length of time equal to the shock experiment. It should be noted that practical conclusions can be drawn only from the results obtained as applying to a condition in which the signs of shock were produced by exposure of the abdominal viscera. If the blood pressure is allowed to decrease until it is much less than half the normal pressure, it is rarely possible to restore it by any known method. This is an important point to consider in placing a value on any method of treatment.

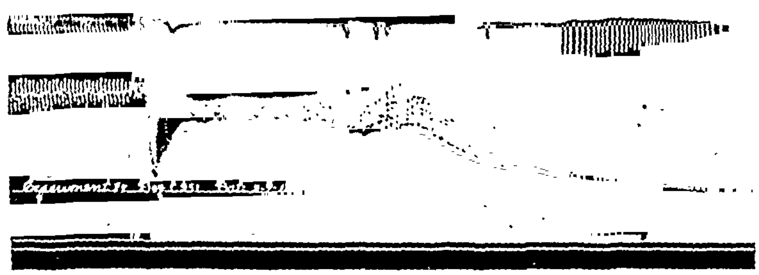

Fig. 3.—Kymograph record showing the effect of stimulating the superior laryngeal nerves under light anesthesia. At *a* ether was disconnected and signal *b* marks the period of stimulation of the superior laryngeal nerve, death occurring. This record is difficult to interpret, but it would appear that inhibition of the heart was the major factor producing death.

The general measures employed consisted of placing the animal in the head-down position, and the application of heat, etc. A slight amount of benefit has been obtained by such methods in experimental shock. In fact, it was found to be of distinct value to keep a heating pad under the animal throughout the experiment, care being taken to apply only a moderate amount of heat.

Drugs are employed for one or two purposes, either as a stimulant to the circulatory system, as strychnin and camphorated oil, or to produce vasomotor constriction, as epinephrin or pituitary extract. The results of the experiments corroborate our previous investigation on the use of stimulants in experimental shock. In none of the experiments was any benefit derived.

The value of the use of vasoconstrictors in the treatment of shock is still an open question. In the first place, although the decrease in blood pressure is of great importance in shock, it is not known whether or not its increase by means of vasomotor constriction is in itself of much permanent benefit to the organism. In the second place, none of the vasomotor constrictor drugs produce a very prolonged effect. In experimental shock it is not possible to maintain blood pressure for a very long period of time near to the normal value by the use of the vasoconstrictor drugs. In our experience pituitary extract produced a more prolonged action, and seemed to be of somewhat greater benefit than epinephrin.

A large number of artificial fluids have been devised with which to attempt to restore the volume of fluid in shock. Our series does not yet include experiments from which positive conclusions may be drawn in regard to all of these. However, they have furnished enough data to justify some tentative conclusions in regard to their use in experimental shock.

1. Physiologic sodium chlorid solution is the least valuable of all the artificial fluids, although hypertonic sodium chlorid solutions are of value.

2. The making of the artificial fluid alkaline definitely enhances its value.

3. The use of glucose in the injected solution is also of definite value.

4. None of the saline solutions alone will maintain blood pressure for more than a very short period of time, even when it has been lowered to but a slight degree by exposure of the abdominal viscera.

5. The employment of the so-called colloidal solutions, such as those containing acacia or gelatin, is of distinct value. The intravenous injection of these fluids will often restore and maintain the blood pressure for several hours after it has been decreased to at least one-half its normal value by the exposure of the abdominal viscera.

6. From these results it would seem that the ideal artificial fluid should contain (*a*) some substance to increase its colloidal properties, (*b*) an alkaline salt, and (*c*) glucose.

7. It should be noted that none of the artificial fluids will give as good results as whole blood or blood serum.

The value of transfusion in the treatment of shock is well known. In this series of experiments, citrated blood produced very good results. In order, however, approximately to restore blood pressure and maintain it, the amount transfused must be comparatively large. About 30 c.c. per kilogram produced the best experimental results. Such an injection will restore and maintain blood pressure under the experimental conditions outlined herein.

Blood serum seems never to have been used in the treatment of shock. In our experiments the intravenous injection of homologous serum has produced as good results, and, in most experiments, better results, than any of the methods employed in the treatment of experimental shock. In none of the experiments in which the blood pressure had not decreased below one half of its original volume did the injection of serum fail to restore and maintain it for several hours. The best results were obtained by relatively large doses, 20 c.c. per kilogram. The serum was prepared by bleeding healthy dogs into sterile bottles which were placed on ice until it was desired to use the serum. From 35 to 40 per cent. of serum can be obtained in the dog in this manner from whole blood.

When blood serum, 20 c.c. per kilogram, is injected into the animal in which blood pressure has been decreased one-half, as the result of exposure of the abdominal viscera, it produces the usual rise in blood pressure and an increase in the amplitude of the heart, which occurs whenever an intravenous injection is made. However, the increase in blood pressure is usually greater, although it may take place more slowly, than when any of the other injection fluids are used, with the exception of whole blood when used in amounts equal to the amount of blood from which the serum was obtained. The blood pressure seldom decreases subsequently, or only to a slight extent, and usually, with the passage of hours, it increases until it may be greater than at the beginning of the experiment. I have not been able to obtain equally good results by any other method, except by the use of large amounts of whole blood.

Whether or not the use of serum will ever prove of any practical value, I do not know. The employment of large amounts of serum other than homologous serum would probably be very dangerous. It is possible that the latter serum might be of value under conditions in which the serum could be kept and whole blood could not be obtained.

The special measures employed in shock, such as rebreathing, have never been shown to be of much value under experimental conditions.

SUMMARY

The term "shock" is used by the surgeon in describing a definite clinical condition; it is probably due to a number of causes. In general, however, all cases may be included in two groups. One group contains the cases in which the clinical manifestation follows some time after the occurrence of the conditions incident to the shock. The other group includes the cases in which a severe or fatal condition supervenes immediately on receipt of the active agent. Experimentally, either condition can be produced by few of the methods which may be compared to their clinical manifestations. Chief of the methods by means of which a condition simulating the cases included in the first group can be produced experimentally is exposure of the abdominal viscera. The symptoms thus produced are due to a loss of circulatory fluid, probably due to, or associated with, a failure of the mechanism to control fluid volume. The signs of shock may be produced by the loss of an amount of circulating fluid that can be sequestered into capillary beds of venous trunks of the four limbs. The part the nervous system plays in the cause of shock is undetermined. It cannot be proved beyond doubt, experimentally, that shock is an etiologic factor, although clinically it seems to be definitely established that it is responsible for death in some cases, and in such cases it will probably be found to be of the nature of inhibition. This group might include a large number of the cases contained in the second group. Experimentally, sudden death has been found to occur under deep etherization following stimulation of the nerves that inhibit respiration. It has also been produced under light etherization by the stimulation of nerves that produced an associated reflex inhibition of the heart. Either of these results may also occur clinically and the cause of death be described by the surgeon as shock. In the treatment of shock, experiments have not shown that the employment of drugs, either as stimulants or as vasoconstrictors, possesses very much value. The logical procedure, at least from the experimental standpoint, in the cases included in Group 1, would seem to be to attempt to replace the lost fluid. The best means of doing this is by the intravenous injection of large amounts of whole blood or blood serum. Some of the artificial solutions give good results. The ideal artificial fluid should contain, (*a*) some substance to increase colloidal properties, (*b*) alkaline salt, and (*c*) glucose.

RECONSTRUCTION OF THE COMMON BILE DUCT *

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Defects in the common bile duct may result from errors in operative technic, from strictures following ulceration or trauma, or from neoplasms. Since excision of the gallbladder has become a frequent practice, possibilities for injuring the common bile duct, particularly in inexperienced hands, have multiplied.

In an effort to devise some method that would be satisfactory in reconstructing the common duct, various procedures have been devised. Sullivan[1] described an operation in which a rubber tube is sutured into the stump of the hepatic or the remaining upper end of the common duct, carried into the duodenum, and surrounded with neighboring tissue and omentum. Molineus, according to Walton, has suggested the use of the appendix for reconstruction of the common duct. However, it is often difficult to secure a satisfactory appendix, the nutrition of the transplanted appendix would be very problematic, and it would carry bacteria it normally contains, which may cause cholangeitis. It is for the last mentioned reason that it has been found unwise to connect the gallbladder with the colon instead of with the duodenum.

Lewis and Davis[2] have used experimentally transplanted fascia from the abdominal wall to repair defects in the common bile duct of dogs. Stropeni and Giacinto[3] reported experiments in which a portion of a vein was used to fill a defect in the common duct.

Walton[4] reviewed bile duct surgery and described an operation in which he uses a duodenal flap. Eliot[5] has given the recent literature on repair of the bile ducts, laying particular stress on the work of European authorities.

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* Read before the Section on Surgery, General and Abdominal, at the Sixty-Ninth Annual Session of the American Medical Association, Chicago, June, 1918.

* Because of lack of space, this article is abbreviated in The Journal. The complete article appears in the Transactions of the Section and in the author's reprints. A copy of the latter will be sent by the author on receipt of a stamped addressed envelop.

1. Sullivan, A. G.: Reconstruction of the Bile Ducts, The Journal A. M. A., Sept. 4, 1900, p. 774.
2. Lewis, Dean, and Davis, C. B.: Tr. Western Surg. Assn., St. Louis, December, 1913.
3. Stropeni and Giacinto: Zentralbl. f. Chir., 1914, **41**, 190; abstr., Gior. d. r. Accad. di med. di Torino, 1914, **77**, 21.
4. Walton: Surg., Gynec. and Obst., 1915, **21**, 269.
5. Eliot, Ellsworth: Surg., Gynec. and Obst., 1918, **26**, 81.

Moynihan[6] suggests the use of the jejunum in the same manner as the Y gastro-enterostomy of Roux. The upper part of the jejunum is cut across and the proximal (oral) end sutured end-to-side about 12 inches below the distal end. The distal end is then sutured to the gallbladder (Fig. 2). Clinically, if the gallbladder was normal, a cholecyst-enterostomy could be done, so the practical application of such an operation would be only where the end of the bowel must be attached to a small contracted gallbladder, or possibly to the stump of the hepatic duct. I have done six experiments after this method of Moynihan (Fig. 3). In all of them the dogs died.

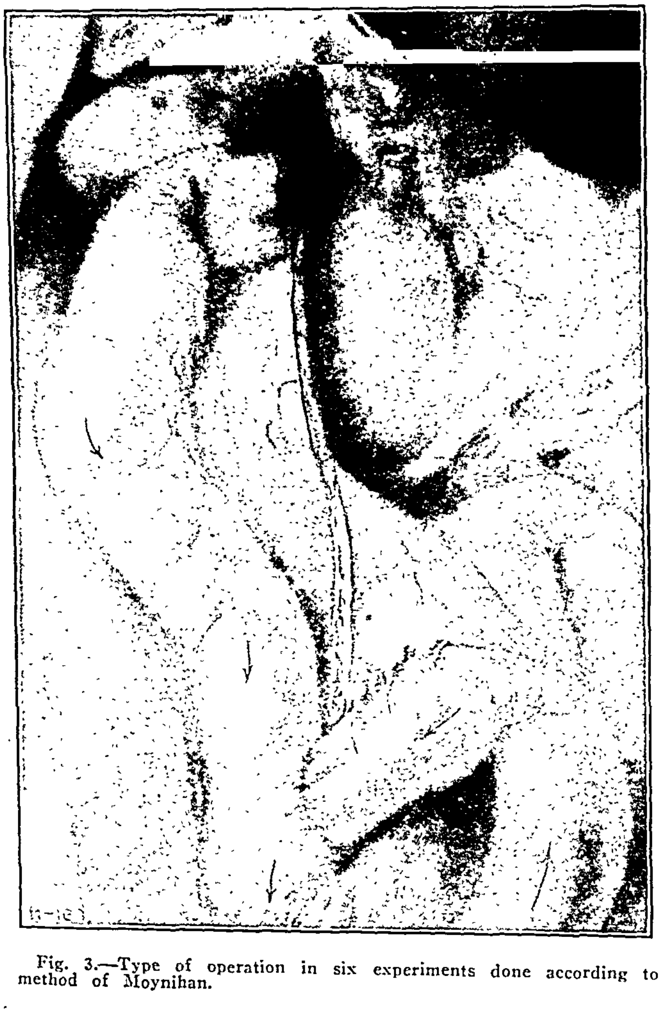

Fig. 3.—Type of operation in six experiments done according to method of Moynihan.

The thin gallbladder when sutured to the thick intestine of a dog readily tears, and the powerful peristalsis pulls loose the sutures. In man, of course, the same anatomic conditions do not exist; but with such fatal results experimentally I would be unwilling to try this operation clinically, even with more favorable tissue.

It occurred to me that probably the transplantation of an everted vein might be successful. Theoretically, the advantages are that the vein, when turned inside out, would have the endothelial coat outside, and this would become adherent to the endothelium of the peritoneum and the surrounding raw surface and the nutrition of the vein be thereby readily established. The vein offers a thin, well organized tube which should require a minimum amount of nutrition as compared with a thick tube of fascia, and if the epithelium from the duct and the duodenum would grow in from the ends of the transplanted vein, we might find a permanent tube of definitely organized tissue that would be satisfactory. These theoretical premises were not borne out by experimental work, as will be explained later.

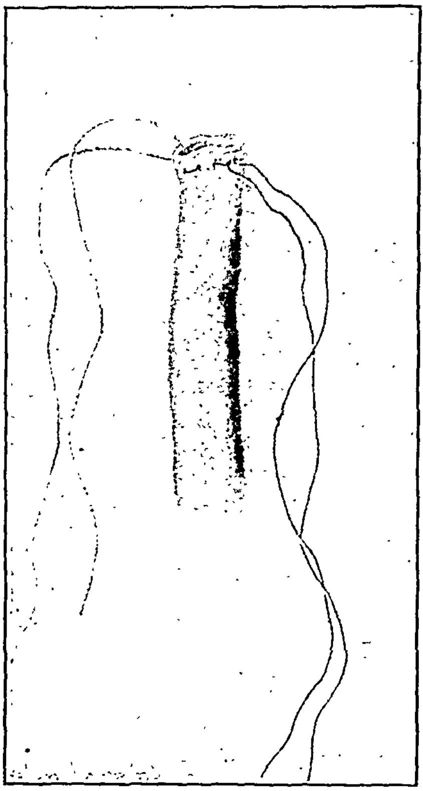

Fig. 4.—Segment of external jugular vein, which has been removed and turned inside out, with catgut and silk sutures placed in position.

TECHNIC

Sixteen experiments were done on dogs in which the following technic was developed:

The vein used is from the external jugular, which seems to serve best for this purpose in a dog and is very large. A ligature is placed at the lower portion of the external jugular, and after the vein has been dissected clean of fat another ligature is placed at the upper end. The length of the segment removed should be at least double the length of the duct to be reconstructed, as the vein contracts greatly. After removal a mosquito hemostat is inserted in the segment of vein at one end, and grasps a bite at the other end; then by pulling on the forceps the vein is turned inside out. The vein should be kept moist with salt solution, in order that it may be handled more satisfactorily. A suture of small tanned catgut is inserted at one end after the manner of a purse-string suture. It is tied so as not to constrict the caliber of the vein. This suture acts as a collar. Opposite the knot in the catgut a silk ligature is placed and left untied (Fig. 4). The vein is now ready for transplanting.

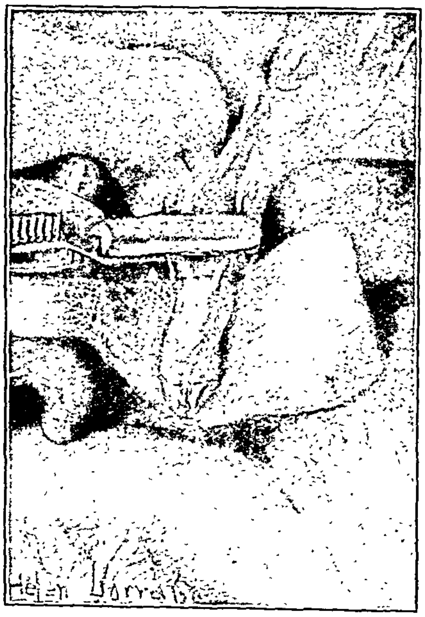

Fig. 5.—Common duct has been dissected free and serrefine placed on upper extremity. Dotted lines indicate point at which it is to be resected.

The common bile duct is dissected free, and a serrefine whose spring has been weakened as for blood vessel work is

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[6] Moynihan, B. G. A.: Abdominal Operations, 2, 3d edition, 334.

placed on the upper part of the duct (Fig. 5). It is important to preserve the peritoneal covering of the duct as much as possible, for this facilitates the healing of the transplanted vein to the stump of the common duct. A ligature is placed on the duct close to the duodenum, and the portion between the ligature and the serrefine is excised. A needle threaded with rather stout silk doubled transfixes the stump of the common duct (Fig. 6). This is a tractor suture and is made long enough for the four strands to traverse the segment of vein, take a small tube, as shown in Figure 11 *a*, and then dangle free in the bowel.

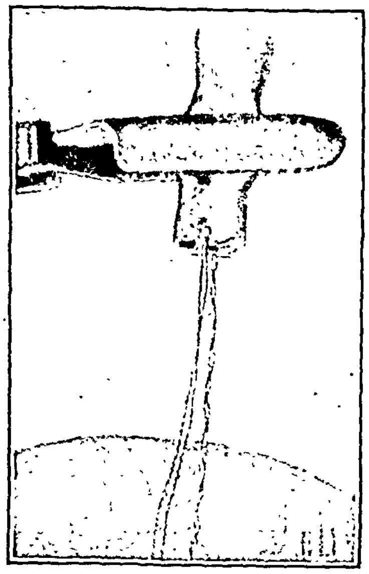

Fig. 6.—Duct has been resected and upper stump transfixed with double silk used for a tractor suture.

This tractor suture is not tied on the common duct for fear of occluding it, but is merely inserted. The object of this suture is twofold: First, it will afford immediate drainage for the bile along the suture, and, second, the thread with its attached rubber tube in the intestine will tug at the end of the duct and prevent its retraction from the vein. If the suture is anointed with petrolatum it is more easily handled.

Mosquito forceps are introduced through the segment of vein and catch the four strands of the tractor suture, drawing them through. Then two of the strands are threaded in a large needle, passed through a short piece of small rubber tube, and tied firmly to the other two strands (Fig. 7). One end of the catgut of the purse-string suture on the vein is now threaded in a small curved needle and catches a small bite in the duct about one-third inch from its end. It is tied snugly while pulling up the vein and pulling down the tractor suture so that the stump of the duct is invaginated into the vein. The ends of the catgut are cut short. Then the end of the silk ligature that was previously inserted into the vein is threaded into a needle, catches a bite of the duct, and is tied at a point about opposite the place where the catgut suture was tied. The silk is left long in order to bring the omentum up later on. In this manner the vein is fixed to the stump of the common duct which has been invaginated into the vein.

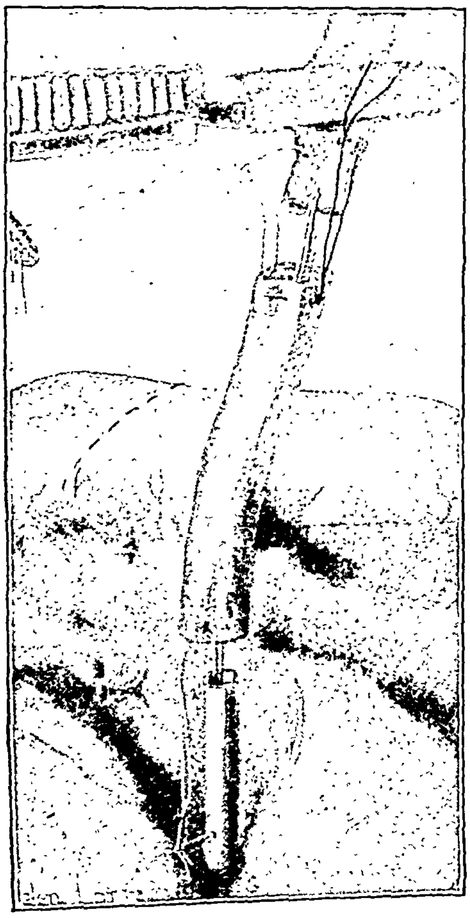

Fig. 7.—Tractor suture has been caught by mosquito forceps which were introduced through segment of vein, pulled through vein, carried through small rubber tube, and tied. Catgut and silk sutures have been carried through stump of common duct and are about to be tied.

A transverse or oblique incision is now made on the duodenum, going down to the mucous membrane but not through it. At the point of incision farthest from the common duct, the mucous membrane is punctured (Fig. 8). A silk or linen suture is passed through the edge of this puncture and catches the vein in at least two places. This suture is inserted from without in and returns from within out, so making a mattress stitch. It is tied, and the tractor suture on the common duct, together with the piece of rubber tube, is pushed through the hole in the mucous membrane (Fig. 9). A few interrupted mattress sutures bury the transplanted

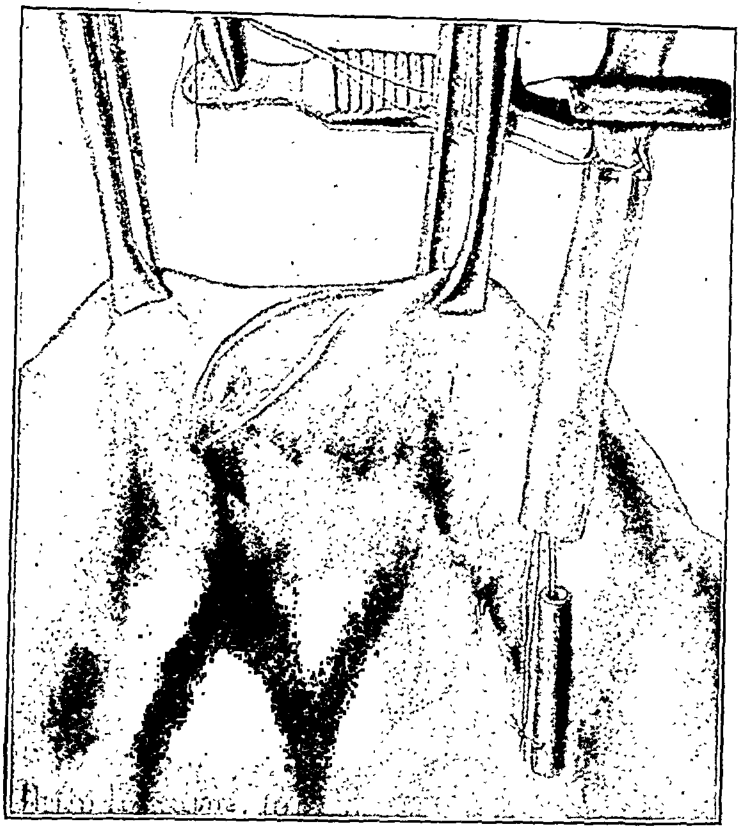

Fig. 8.—Incision is made in duodenum down to mucosa. Mucosa punctured at end of incision farthest from duct, utilizing the principle of Coffey.

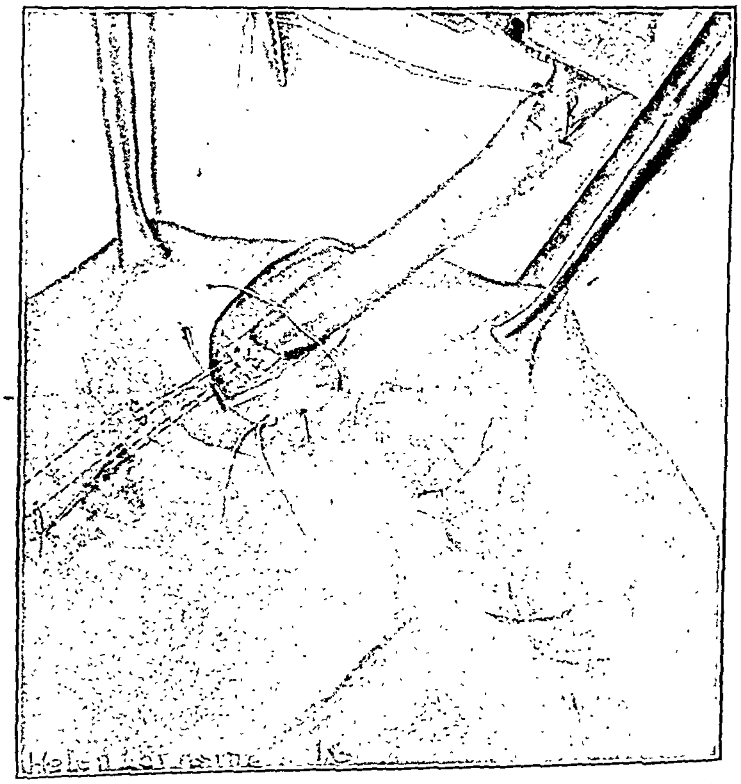

Fig. 9.—The tractor suture with rubber tube has been placed within the bowel. The vein has been fastened by a mattress suture through mucosa, and the wound in the duodenum is being closed.

vein, making its insertion oblique and using the mucous membrane as a valve as recommended by Coffey. The end of the silk suture that holds the vein in position at the upper stump of the common duct is now threaded on a needle, and a piece of omentum is brought up and held around the transplanted vein by means of this suture (Fig. 10).

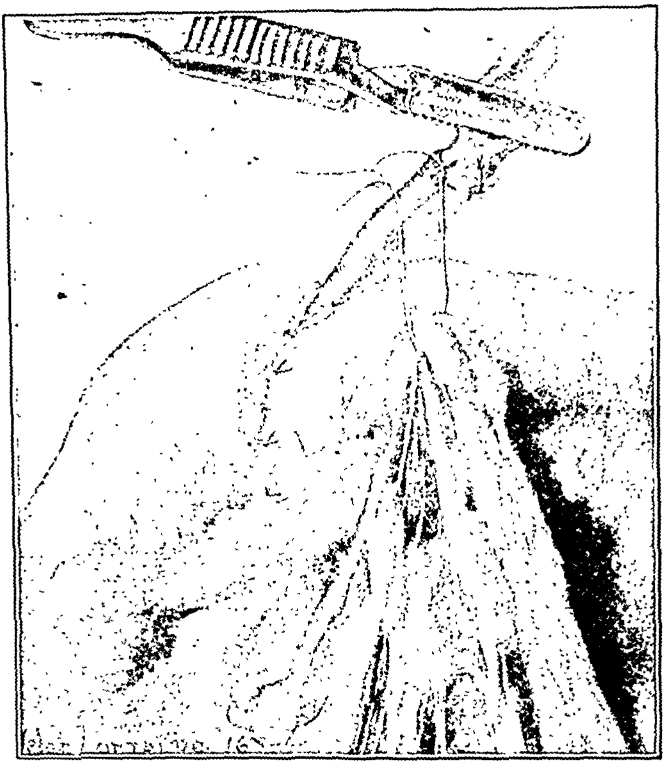

Fig. 10.—The long end of the silk suture in the upper part of the vein catches the omentum and holds it around the reconstructed duct.

RESULTS OF EXPERIMENTS

Of the sixteen experiments, in the first and the third dog there was no provision made for drainage of bile through the transplanted vein. Both died with leakage at the junction of the duct and the vein; the vein having become a solid cord. Six other dogs either died or were apparently about to die when killed within from seven to forty days after operation. In each instance there was occlusion of the transplanted vein.

In those that died soon there was usually leakage at the junction of the vein and the duct. One dog (Dog 14) died two days after operation, the abdominal wound having opened. Six dogs were in fairly good condition when killed from nineteen to forty-five days after operation. In one (Dog 7) the transplanted vein was distinctly patent thirty-six days after operation, and in another (Dog 13) nineteen days. In the other four the vein seemed to be well nourished, though it was occluded at the distal end. One dog (Dog 16) was killed under an anesthetic three and one-half months after operation. It had been well up to three weeks before being killed. It then began to look bad and became emaciated and jaundiced. Postmortem showed the reconstructed duct occluded and much shortened, and the common and hepatic ducts enormously dilated.

Dilatation of the common and hepatic ducts occurred in all cases, even when the reconstructed duct was still patent. This was probably due partly to interference with peristalsis and partly to pressure within the duct as well as to beginning obstruction.

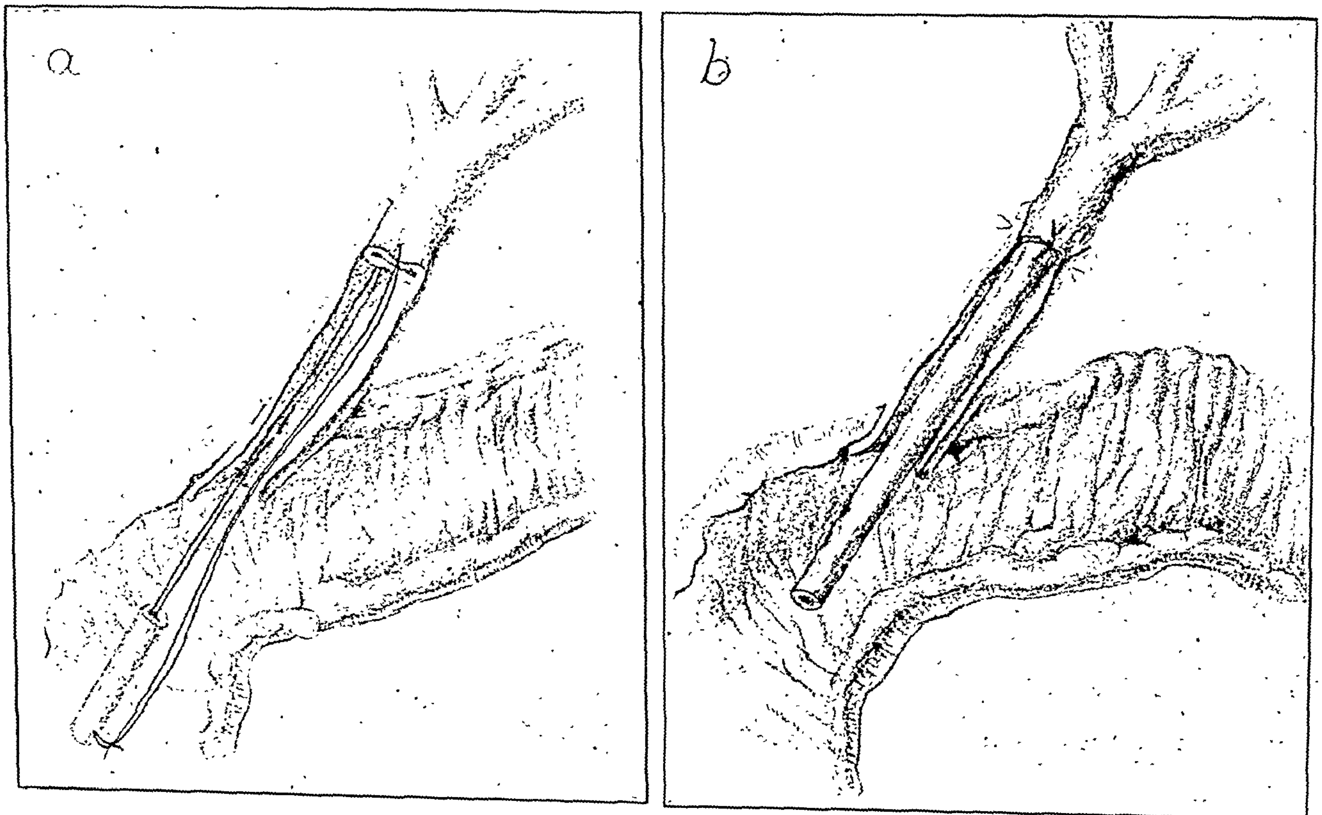

Fig. 11 A

Fig. 11 B

Fig. 11.—Sections showing: a, relation of the tractor suture in the reconstructed duct; b, modification in which small rubber tube was used instead of tractor suture. It did not have any material advantage.

The practical conclusion from these experiments seems to be that while it is possible to reconstruct the common bile duct with an everted segment of vein, the final result is unsatisfactory. In man the immediate danger from the operation, leakage at the point of junction, could be largely avoided by drainage, which is impracticable in a dog. When a dog recovered from the immediate effect of the operation, it did well for several weeks; but if the animal was permitted to live long enough, it became ill from one to three months after the operation.

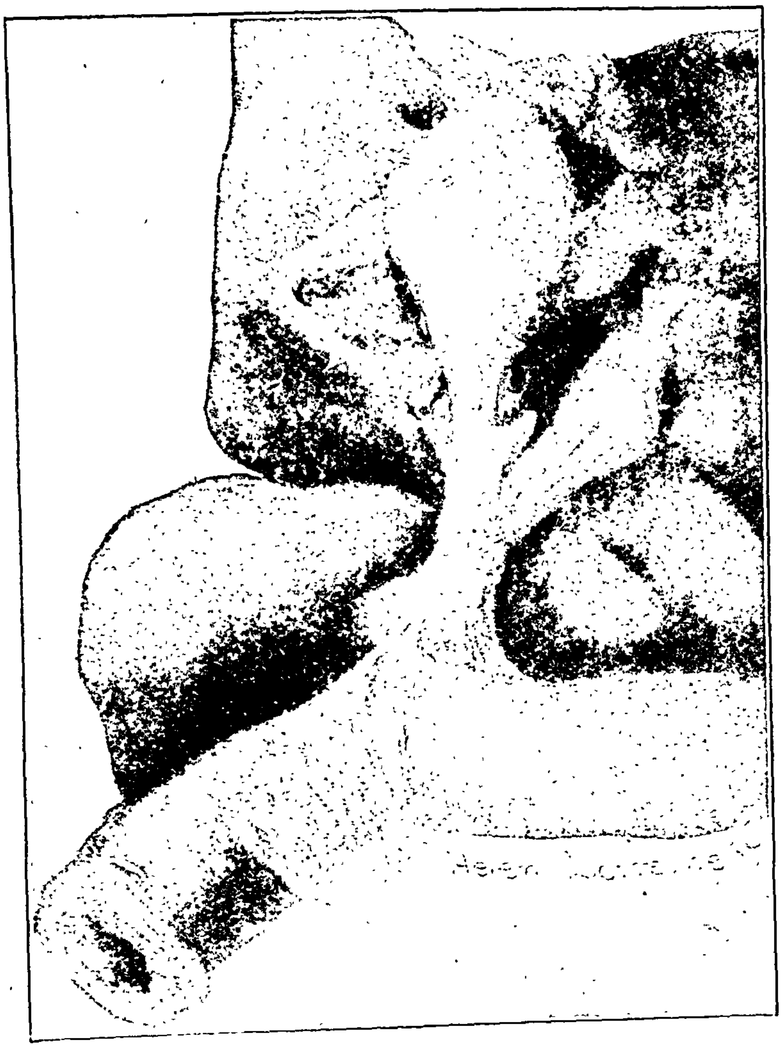

Fig. 15 (Dog 16).—Specimen removed 109 days after operation. The transplanted duct is greatly shortened, completely occluded and buried in a mass of adhesions. It shows as a short cord connecting the dilated ducts to the duodenum. The dog was in good condition until about two weeks before death.

The explanation of this failure is that it is due to contraction of the reconstructed duct, and analysis of the postmortem examinations and the microscopic findings throws some light on its cause. Though the everted jugular vein made a tube several times the caliber of the normal bile duct, contraction invariably took place. In some instances contraction was more rapid than in others, but it always occurred and, if the dogs were permitted to live, eventually there was occlusion.

Microscopic sections of the transplanted vein show a marked inflammatory round cell infiltration of the adventitia, the internal layer of the everted vein, whereas the outer layer, or the intima, with its adjacent coat, had very little infiltration (Figs. 17, 18, 19 and 20). This testifies to the irritating effect of bile on that layer of transplanted tissue with which it came in contact. Such continued irritation, resulting in prolonged infiltration with inflammatory products and small round cells, causes contraction.

COMMENT

There seems to be what might be called a biologic law of the immunity of tissue near an irritating discharge to the effects of that discharge. This immunity may be relative or absolute, but it appears to exist to some extent in the tissue immediately around the lining of the bile tracts, the bowel and the urinary apparatus. Operations, for instance, around the anus and in the perineum where contamination with fecal discharge cannot be entirely avoided are not often infected. In perineal prostatectomy, in which the wound is in close proximity to the anus, there is rarely infection, which is more common after the suprapubic operation, when only urine and no fecal matter come in contact with the wound.

The immunity of neighboring tissue to local irritating discharges is well illustrated by the healing of intestinal wounds. In a sutured intestine the peritoneal surface first unites, and soon after this the epithelium grows over the internal surface of the wound. Later, the submucosa and the muscular coats are repaired. The intestine finally straightens out, as shown by the early studies of Halsted and Mall, and repair eventually becomes practically perfect. Healing goes on with the fecal current flowing over the wound. But if a cut were made through the corium and all the layers of the skin of the arm, for instance, and the wound kept constantly bathed in fecal matter, as an intestinal wound is, repair, if it ever occurred, would be slow and with a large scar.

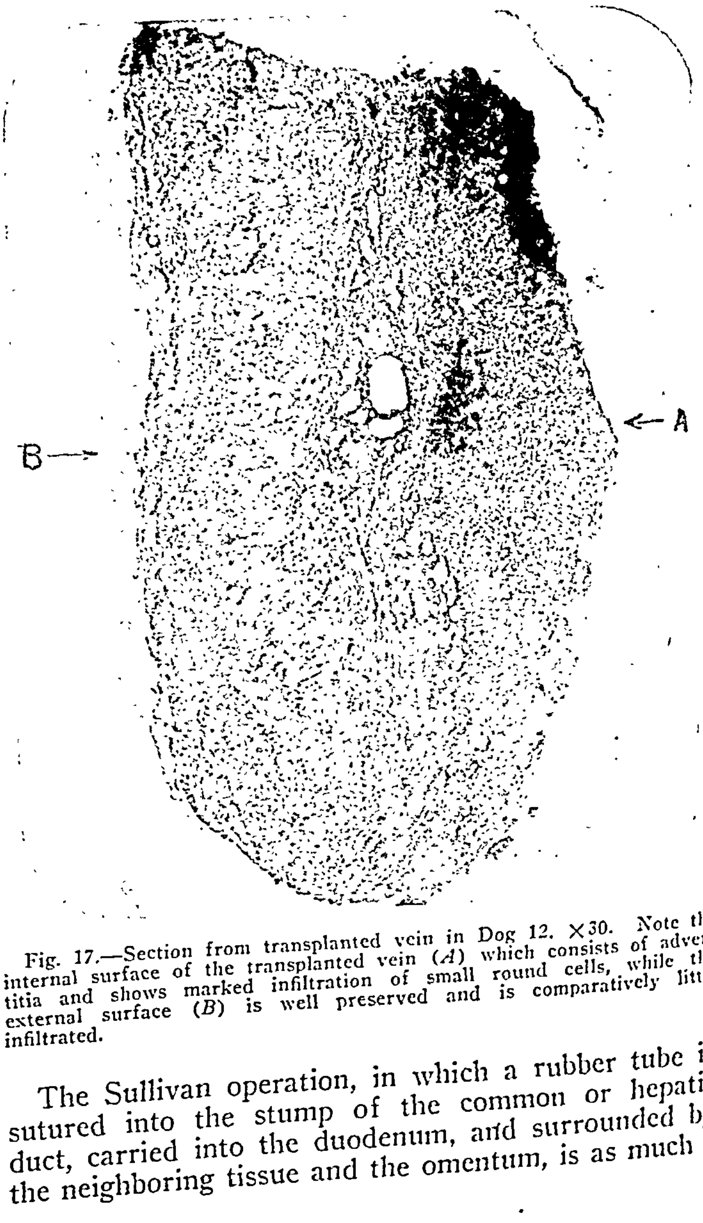

Fig. 17.—Section from transplanted vein in Dog 12. ×30. Note the internal surface of the transplanted vein (*A*) which consists of adventitia and shows marked infiltration of small round cells, while the external surface (*B*) is well preserved and is comparatively little infiltrated.

The Sullivan operation, in which a rubber tube is sutured into the stump of the common or hepatic duct, carried into the duodenum, and surrounded by the neighboring tissue and the omentum, is as much a transplantation of tissue as when fascia or venous segments are transplanted. In one instance tissues in the neighborhood are made to form a channel around the rubber tube, and in the other there is a free transplantation. The Sullivan operation results in a biliary fistulous tract, probably similar in general construction to an external biliary fistula that follows removal of a drainage tube after an operation that opens the bile tract. It is well known that the irritating effects of the bile and the resulting scar tissue tend to produce contraction and occlusion of such a biliary fistula to the skin. It has been asserted that in an operation of the type of the Sullivan operation, the epithelium from the stump of the duct would grow over the tract made by the tube and so prevent contraction. A similar hope was entertained by me in my early experiments, that the well organized and well nourished walls of a thin vein would form a satisfactory foundation for the epithelium to grow on. However, we found that unless the tissue has some immunity to the effects of an irritating discharge with which it is constantly bathed for a long time, inflammatory infiltration and contraction take place. In this respect the Sullivan operation, which utilizes the neighboring tissues, may be less liable to be followed by contraction than when tissue is transplanted from a distance, though the immunity of tissue outside the duct itself, even in close proximity to the duct, would probably not be very great.

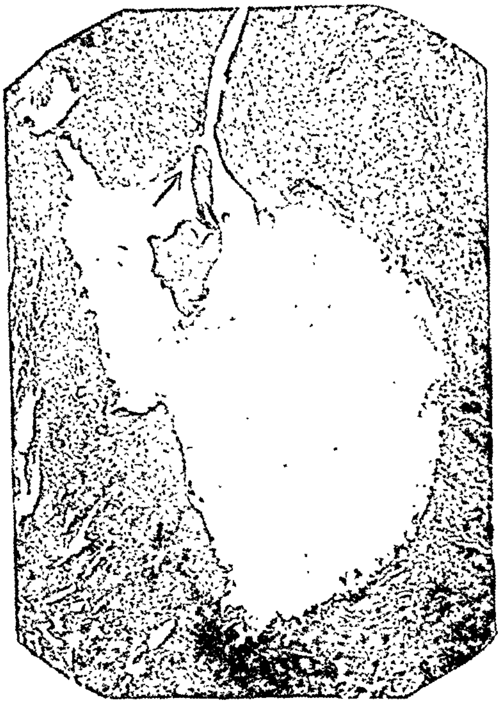
Fig. 20 (Dog 7).—Transverse section of transplanted vein, thirty-six days after operation. Note contraction, folding in, and round cell infiltration around lumen; × 30.

An interesting fact emphasized by these experiments is that constriction and occlusion of the duct do not result from contraction of the epithelial tissue but of the connective tissue. This is universally true. The striking deformities that are seen in the face after a burn are, as a rule, healed over with epithelium; but the contraction is due to the scar tissue under the epithelium which replaced the corium. So in stricture of the urethra, the surface is rarely raw, but is usually covered with epithelium, the stricture occurring from contraction of the connective tissue which has replaced the submucosa. It is, then, contraction in tissue that corresponds to the corium in skin or the submucosa of mucous membrane that is responsible for such deformities or for stricture, even though the surface is completely covered with epithelium. That epithelium does grow over at least a portion of the reconstructed duct is shown by one of the accompanying photomicrographs (Fig. 21); but this in no way prevents ultimate contraction of the tissue that replaces the submucosa. I call attention to this fact because in a number of instances in the literature, the assumption seems to be that if the reconstructed duct is lined with epithelium, no contraction will occur.

If epithelium is removed from the skin or mucous membrane, and if the defect is not too large and the corium or submucosa has not been materially injured by trauma or infection, repair will be perfect; but if the corium or submucosa has sustained any but the slightest injury, a permanent scar will result. Scars resulting from mechanical trauma, such as a cut with a knife, are notoriously less extensive than those that result from burns, infection or chemical injury. After mechanical trauma when there is no infection, the damaged tissue is destroyed or removed and the adjoining cells are not affected. But in an injury from a burn or from a chemical irritant, which for this purpose includes infection and irritating discharges, besides those cells that are entirely destroyed many adjacent ones are affected though they may not be killed outright. Later, they atrophy and are replaced by scar tissue. This necessitates repair not only of the tissue that is killed outright, but of the cells whose vitality has been impaired in a zone outside of that in which complete death of cells occurred, and calls for a high degree of hyperemia and extensive connective tissue formation, which means a prominent scar and marked contraction. In a reconstructed bile

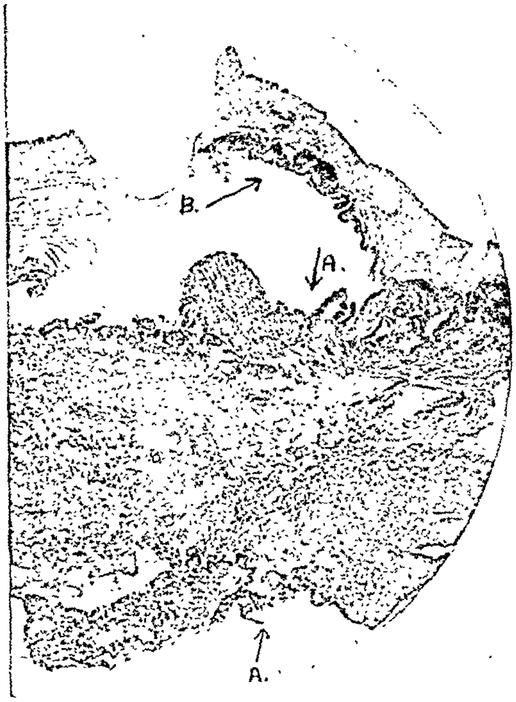

Fig. 21 (Dog 12).—Section of junction of transplanted vein with stump of common duct (*A*, *A*) twenty-three days after operation, × 30. Note that the columnar epithelium has grown a considerable distance over on the transplanted vein; but its attachment was slight and was partly broken loose during section (*B*).

duct where a vein or other tissue that has no natural immunity against the chemical irritation of bile is used, we have the very conditions that produce a large amount of scar tissue, so subsequent contraction inevitably ensues.

The conclusion may be stated that repair of any structure over which irritating discharges flow should be made by tissues that are either wholly or partly immune to these discharges. Repair of defects of the common duct, then, should be done with *a view to the* avoidance of subsequent contraction which will surely occur, whether epithelium lines the newly constructed tube or not, if nonimmune tissues foreign to this region are used. *It seems* that the most satisfactory reconstruction occurs when the stump of the common or hepatic duct is sutured to the mobilized mucosa and submucosa of the duodenum. In this way epithelial and subepithelial layers of tissue that are accustomed to the biliary discharges are employed; and if an accurate approximation is made, the submucosa of the duodenum unites with the corresponding tissue of the stump of the duct, and no more contraction should occur than would take place after suturing a wound in the intestine. Dr. William J. Mayo has employed such a technic in his clinic for a number of years, and similar work has recently been reported by Dr. Le Grand Guerry.

RECONSTRUCTION OF THE CHOLEDOCHUS

LE GRAND GUERRY, M.D.

COLUMBIA, S. C.

Surgeons are occasionally forced to the necessity of reconstructing the common duct. Surgical literature is full of case reports, and many methods have been advocated by equally as many writers, involving the transplanting of fascia, the transplanting of blood vessels, the transplanting of the peritoneal layer of the duodenum, and so on to the end of the chapter. Some of the operations are good and others are distinctly bad.

Experimentally many plans have been tried on dogs with varying degrees of success. Unfortunately, what will work in the dog laboratory will not always work in the human abdomen, and the simple method I present, although done independently under the force of circumstances seven years ago at our hospital, is not an original plan, for in reviewing the literature I find case reports of almost the identical procedure. I do not wish the foregoing statement to be construed as a criticism of the invaluable experimental work carried on by Crile, Cushing, Horsley and many others, for we owe a large part of our progress in surgery to such work. I feel, however, that when due allowance has been made, there is a tendency among some to test the final value of a given method in the experimental laboratory rather than under actual conditions in the human body.

In January, 1916, Mayo[1] published a splendid article on "Restoration of the Bile Passages," which every one interested in this subject should read. The method described in this article is almost identical in principle with the one under discussion. It appears to me that in our effort to find something new under the sun we have focused our thought too much on the experimental laboratory and have overlooked the most natural way of overcoming these defects in the bile passages.

REASONS FOR RECONSTRUCTION

Some of the reasons why it is necessary to reconstruct the common duct are as follows:

1. In case of permanent obstruction at the head of the pancreas, if the gallbladder is intact, we shall have plain sailing. Cholecystoduodenostomy is, however, a short-circuiting operation rather than a reconstructing of the bile passages. If the gallbladder has been removed, there will be another story to tell.

2. It may be necessary to restore the bile passages on account of inflammatory stricture of the common duct. If the stricture of the common duct extends above the junction of the cystic and hepatic ducts, it may be necessary to excise the strictures and then, if possible, apply the method to be described, or the stricture may be divulsed.

3. The common duct may be divided in the operation of cholecystectomy. As a matter of fact, injuries to the choledochus are usually the result of operative measures. If the accident is discovered immediately, repair is much easier than if a secondary operation is necessary to correct the injury. It is vitally necessary to remember here that the junction of the hepatic and cystic ducts which form the common duct is not always at a fixed point.

Whenever we attempt the operation of cholecystectomy, the point just mentioned must be constantly borne in mind. The usual position at which the cystic duct enters the hepatic duct is about three quarters of an inch below that portion of the hepatic duct which lies within the liver itself. However, the junction of these two ducts which form the common duct may occur as high up as the fissure of the liver, or they may run parallel with each other and unite almost at the entrance into the duodenum. According to Gray's Anatomy, they may remain independent throughout their course, or the junction may occur at any point between the fissure of the liver and the duodenum.

Not only, then, do we have the junction of the hepatic duct and the cystic duct at a point whose location varies, but the two ducts running a parallel course and in intimate association one with the other and at times overlapping each other. When this unusual anatomic situation occurs, unless the two ducts are isolated and identified before the gallbladder is removed, accidental injury to the hepatic or common duct can and often does occur.

A case within the last few months beautifully illustrates this point. A male patient, aged almost 60, had a large stone in the ampulla of Vater, producing obstruction of the common duct. The hepatic and cystic ducts were both distended to the size of one's index finger and could be clearly traced almost to the duodenum before the junction was effected.

RESULTS OF OPERATION

The three essential things to be accomplished by the operation are as follows:

1. In certain of the cases in which the duodenum is closely bound down by adhesions, its mobilization is most important, as we are thereby enabled to effect the anastomosis with greater accuracy.

2. This step I believe to be fundamentally necessary. The essential thing, as the illustration will show,

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[1] Mayo, W. J.: Surg. Gynec. and Obst., 1916, 22, 1-6.

is so to mobilize the mucosa of the duodenum that when the suture line is completed, the mucosa and the submucosa of the duodenum will be directly united to the light structures of the hepatic duct. If this is done, we shall have a continuous epithelial lined passage, and contraction in all probability will not occur. This point illustrates the inherent weakness in many of the so-called autoplastic reconstructions of the bile passages. Some of the methods break down just here, in that they fail to provide a continuous mucus lined passage for the bile.

3. The third objective to be attained is the one so clearly set forth by Dr. Horsley in the preceding paper. His experimental work shows clearly that contraction may occur in an epithelial lined sinus: "Construction is due to contraction of underlying fibrous or connective tissue and not to contraction of the epithelium itself" (Horsley).

The absence of a proper submucosa as a covering for the line of union may bear the same relation to the contraction of the anastomosis as the corium does to a burn of the skin. We do not have contraction in a superficial burn of the skin, because the corium, which consists of connective tissue, that is, elastic fibers, contributes elasticity to the skin. This portion, also the seat of the sensitive layer, is not destroyed. On the other hand, however, contraction always occurs when the corium is destroyed. The point is that the corium bears the same relation to contraction following a burn of the skin as the submucosa bears to contraction following anastomosis between the common duct and the duodenum.

CONCLUSION

I wish to make this point perfectly clear. I am not setting up the claim that this is the *only* way of remedying these defects in the bile passages. We may be quite sure that in many instances this method will not be suitable. What I do contend, however, is that the plan has a sound surgical and physiologic basis.

As the illustrations will show, the method provides a continuous mucus-lined passage and a submucosa from a location and under conditions as normal as we may hope to obtain. It appears to me, then, that in the group of cases suitable for this method of relief, the bile passages may be restored as nearly as possible to a normal condition.

Briefly then, my experience with reconstruction of the bile passages is confined to seven cases. One particularly interesting point about the third case was that the stump of the hepatic duct was so short that, try as I might, it was quite impossible to suture the duodenum to the hepatic duct. Consequently the gap between the two, which was about one-half inch in length, was bridged by a small rubber tube about the size of a No. 9 catheter. To my intense delight, the tube was passed about the fourteenth day, and, after a slight external drain of bile which lasted for about one month, this patient has remained well ever since.

There were two deaths in the seven cases. One death in a woman aged 70 was due to surgical shock and followed the operation within three or four hours. The second fatal case was due to postoperative pneumonia. One patient, who survived the operation and was alive four years afterward, had a small external biliary fistula that drained bile intermittently. Her health, however, was much improved, and since then she has passed from under my observation. The remaining four patients have remained well ever since the operation, and may fairly be regarded as complete symptomatic cures.

ABSTRACT OF DISCUSSION

ON PAPERS OF DRS. HORSLEY AND GUERRY

Dr. Arthur G. Sullivan, Madison, Wis.: I wonder if you fully grasp the significance of Dr. Horsley's statements as regards the influence of a lining epithelium on duct contracture? The question is constantly raised as to whether the epithelium actually grows and eventually unites in the new-formed canal made by my method. A sinus lined by epithelium is by no means insured against contraction. The old belief that epithelium itself would prevent contracture is not correct. Epithelium itself does not necessarily have any influence as regards keeping a duct patent, nor does its absence interfere with the discharge from a persistent biliary fistula. Do you ever worry that a persistent biliary fistula will close? Your chief worry is that it will not close. As long as there is obstruction so that the course of least resistance is for the bile to come outside, the bile will come outside, epithelium or no epithelium. You all have had experience with fecal and urinary fistulas and have worried considerably for fear they would stay open, although you knew full well that they were not lined by epithelium. As Dr. Horsley indicates, the character of the wall itself holds the secret as to whether a new-formed sinus will eventually contract, granting, of course, that there is a constant and regular discharge of bile through the sinus. The epithelium fully lined the new-formed ducts in my experimental work.

The various methods which have been proposed for bile duct repair have looked very well in the illustrations, but many of them cannot be utilized at all in the average case which requires duct reconstruction. The method portrayed by Dr. Guerry looks good, and it evidently has been successful; but to be candid, I can scarcely see that the end result of Dr. Guerry's operation, as indicated by his illustration, is at all different from Dr. W. J. Mayo's, in which he mobilizes the duodenum and sutures to it the divided hepaticus. I do not want you to get the wrong impression of my faith in the rubber-tube method. If you are faced with a predicament in which there is no gallbladder and no opportunity to unite the hepatic duct directly to the duodenum, put in a rubber tube and cover it with the tissues near at hand. As Dr. Coffey has stated, those tissues probably lend themselves better to the rather irritating effect of the bile than do those of a transplant. If you will do this, your efforts may be successful.

Dr. C. N. Davis, Chicago: Dr. Horsley made mention of some experiments done by me some three years ago. We worked with fifty dogs and transplanted fascial flaps in an effort to repair the common duct. Our results were good and bad. In confirmation of what Dr. Sullivan has said, we found that the ducts made by fascial flaps were lined by epithelium. The great majority of our animals were lost because of stricture, not through the fascial tissue, but at a point where the duct had been cut across. We tried to obviate this stricture by cutting the duct in an oblique manner. But this seemed to have no effect whatever. A few of the animals survived, but the great majority died because of the constriction where the duct was cut. Two or three years ago a Chicago surgeon resected the common duct in doing a gallbladder operation. A drainage tube was put in and the patient allowed to drain. Some three or four months after that we put a tube in and reconstructed the common duct over a T-tube. The bile discharged through the long end of the T-tube and discharged normally into the intestinal tract. The tube was left in place for six months and the patient gained weight. Everything went lovely. A few months later the tube was removed, and in a short time the patient's condition was as bad as before the operation. She was operated on again, and later the tube was taken out, with a like bad result. She was operated on a fourth time. A T-tube was put in, and the patient says it will be removed only from her dead body.

Dr. L. L. McArthur, Chicago: I had not the advantage of the recent experimental research work on bile tract restoration when I met with my first case in 1907. Dr. Sullivan's article had not then been published, so I improvised a means of reconstructing a common duct which had been injured in the preceding operation. The patient, who suffered two or three years with icterus whenever his fistula closed, but was relieved when it was open, desired something to be done. It was possible to find a dilated proximal common duct. The gallbladder had been removed at a former operation. Into this dilated common duct it was possible to introduce a rubber tube. There was no possibility in the cicatricial tissue which surrounded this field (he had had three previous operations) of finding the distal portion of it. So a pursestring suture was made in the duodenum at the point most closely lying to the proximal end of the common duct, and a tube introduced through an incision in the center of this area after a pursestring suture had been made in the common duct proximal end and a tube inserted. Reasoning that it was essential that that tube should come away not at once, but after some time, I did this: I turned back a cuff on the rubber tube about one-quarter of an inch, then turned that back again so that I had a round knob on the end of the tube about twice the size of the tube, narrowing its lumen, but permitting the bile to flow. With the proximal end in the common duct, it was easy to constrict the common duct, leaving its mucosa attached so that it brought it close to the duodenum. I wanted the tube to come away, but not too soon. I made it 8 inches long and let the 8 inches go down the duodenum, so that the constant peristaltic pulling for five or six weeks all that time gave a chance for epithelium to develop. That scheme works. I have done it now for the fourth time, and one of my associates, calling me to assist him in a difficult icteric case, repeated it successfully for the fifth time. The practical hint is, to follow the suggestion of Willy Meyer, bring the duodenum as close as possible to the stump of the proximal end of the common duct and keep it patulous until the mucosa can grow to mucosa. While the experience of any of us will not be great in numbers, so simple a resource as that described can be found in any operating-room.

Dr. I. J. Strauss, Chicago: In 1912, when I reconstructed ureters from the fascia lata, I got a patent ureter. Epithelium will grow on any medium. You cannot prevent epithelium from growing over a hollow viscus. As to end results, experimentally from the bile duct work, success is due entirely to technical skill. If you take a fascial transplant uppermost, then the hydrostatic bile will distend the tube. Dr. Davis is correct. When I did ureteral work I did bile operations and put a stone into the duct. Then the hydrostatic action caused stricture, and you take out the stone and you have no stricture whatever. This shows that the bile within the common duct is under a very low pressure, and consequently there is always a constriction. If we have high hydrostatic action, we would have no pressure, and these cases of reconstruction of the bile duct would be a success.

Dr. J. Shelton Horsley, Richmond, Va.: The pathology of a biliary fistulous tract is intimately connected with such reconstructive work. Of course, the fistulas that do not close impress us. What is the proportion of external biliary fistulas that do not close to those that do? Exceedingly small. If they do not close we know the reason; usually some obstruction to the bile lower down. The Sullivan operation is as much a transplantation as when a vein or fascia is used and has the advantage of a pedicle for bland supply. Sullivan's procedure has the additional advantage, too, of using tissue in the neighborhood, which has some immunity to the irritating effects of the biliary discharges; but a free transplant is not so well nourished, has no immunity to the irritating discharges, and will eventually contract. The ideal method is to unite the stump of the duct to the submucosa of the duodenum. Dr. Sullivan has authorized me to say that he is in no way responsible for the T-tube. In pulling it out it causes too much damage.

Teach Health to the Children.—Since 90 per cent. of our American children leave school at or before the eighth grade, public health must be taught in the grades if the majority of the population is to be reached.—*Minnesota Public Health Association Journal.*

HEMOPHILIA

EXPERIMENTAL DATA BEARING ON THE EFFECT OF GLYCERINIZED EXTRACTS OF VISCERAL HEMOPHILIC TISSUE ON THE COAGULATION TIME OF BLOOD *

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AND
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PHILADELPHIA

Inasmuch as the active etiology of hemophilia remains one of the unsolved mysteries of medicine, and inasmuch as medical science affords us no remedial agent which will permanently eradicate the disease, the investigations to be recorded were undertaken with the hope that some new information with reference to the cause of the remarkably slow coagulative property of the blood in hemophilia might be provided. The opportunity to conduct these investigations came to us by reason of the death of a 6 year old lad, who presented the classical family history of this disheartening affection. He had been admitted to the pediatric service of the Mount Sinai Hospital of Philadelphia on several occasions. Each time profuse hemorrhage had followed the slightest trauma to skin or mucosa. Usually he bled from the tongue, mouth or lips—the result of teeth bites from falls. The slightest pressure would produce extensive subcutaneous ecchymoses. At no time would the bleeding cease spontaneously or by the use of ordinary measures. Horse serum or the direct injection subcutaneously of freshly drawn human blood was always necessary to control the bleeding. The anemia following one of these attacks was always profound, and frequently he would become highly toxic following an injection, presenting hyperpyrexia, delirium, urticaria and other evidences of the intracirculatory destruction of foreign protein. Once the bleeding ceased, however, his color and animation would return with amazing rapidity. His father did not bleed, nor did his mother, nor his sister, but his brother, who even now is a patient under the care of one of us (Lowenburg) at the Mount Sinai Hospital, just recovering from a severe hemorrhage following a slight trauma on the forehead, and which required intravenous transfusion to control it, frequently has attacks of bleeding. There is no history of consanguinity. His maternal uncle is a bleeder, having required intravenous transfusion to control what appeared to be spontaneous hematuria. This occurred on two occasions and almost cost the patient his life. Another maternal uncle bled to death. Thus it is seen that we are dealing with a typically classical case of hemophilia. Our patient died at the Mount Sinai Hospital following uncontrollable intestinal hemorrhage of unknown origin.

Assuming that the blood of hemophiliacs does not come in contact with extravascular tissues (skin, muscle, fascia, etc.), that the coagulation time under such circumstances is unduly prolonged beyond normal is not the subject of professional controversy. Howell's experiment, wherein he showed that hemophilic blood drawn directly into a test tube sometimes consumes five hours in clotting, may be readily verified by repetition. Normal blood is coagulated within from thirty to forty minutes. Hemophilic blood presents no striking abnormal variations in the white and the red cell count and the blood plaques. Various authorities have, however, proposed divergent hypotheses as to the elemental causal factor, some ascribing it to an overabundance of anticoagulative substances and others to a deficiency of procoagulative agents.

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* Read before the Section on Diseases of Children at the Sixty-Ninth Annual Session of the American Medical Association, Chicago, June, 1918.

Thus Morawitz, as well as Lossen,[1] attributed the defect to a lack of thrombokinase; Weil[2] attributed it to an excess of antithrombin; Wright, to calcium deficiency, while Addis[3] and Howell[4] showed experimentally that there was a lack of prothrombin. Howell, as well as Nolf,[5] found no calcium deficiency, and indeed Lossen proved that adding calcium to hemophilic blood causes no decrease in coagulation time. Howell, furthermore, demonstrated no deviation from a normal fibrinogen content and that the blood of a hemophilic, when brought in contact with the tissues of the same person, is coagulated rapidly. For example, if during venipuncture of a hemophiliac, the technic is faulty, and some blood traverses the subcutaneous tissues before it is drawn into a test tube, the blood will clot in little longer time than normal.

Since all workers are practically agreed that extracts of the external tissues exert a marked influence in diminishing the coagulation time of hemophilic blood, it occurred to us to investigate the effects of extracts or emulsions of the various internal tissues, both from our dead hemophilic patient, as well as from those of an apparently healthy, normal boy who died by accident, and to ascertain the effect of these, if any, on the coagulation time of blood.

Our work consisted in preserving samples of the following tissues: brain, thyroid, heart, liver, kidney, suprarenal, pancreas, spleen, muscle and bone marrow.

PREPARATION OF TISSUES

The tissues were cut into very small pieces, and washed in running water for about three hours to rid them of as much blood as possible. They were then ground in a mortar with three times their volume of physiologic sodium chlorid solution and a little glycerin was then added.

To test the effect of these tissue extracts on coagulation of blood, advantage was taken of the method outlined by Howell, consisting of first, oxalating blood plasma and then reactivating coagulation in such plasma by the addition of a suitable amount of calcium chlorid. In this way normal blood plasma clots uniformly in from eight to twelve minutes. The effect of the addition of the various tissue extracts to such preparations of plasma was easily ascertained by gently tilting the test tubes and observing closely how long it took the plasma to form a firm coagulum.

Blood from a normal person was drawn by venipuncture into a Lüer syringe and at once run into a test tube containing a solution of sodium oxalate in physiologic sodium chlorid solution, so that the oxalate was present in about 0.12 per cent. of the entire volume. The oxalated blood was then centrifuged and the supernatant yellowish green plasma pipetted off. The clotting of the plasma was reactivated by adding calcium chlorid as follows: 0.5 c.c. of oxalated plasma was placed in each of five test tubes, and to these were added in series of 0.1, 0.2, 0.3, 0.4, 0.5 c.c. of 0.5 per cent. solution of calcium chlorid, and the coagulation time observed in each test tube to ascertain which amount of calcium chlorid caused the quickest and most uniform coagulum. After several repetitions of this test 0.35 c.c. were found to be most efficient, and with this amount the plasma clotted in eight minutes and forty seconds. Any amount less or more than 0.35 c.c. caused slow, uneven, or no coagulation at all.

Into each of three test tubes were placed 0.5 c.c. of oxalated plasma, one drop of the tissue emulsion and 0.35 c.c. of the calcium chlorid solution. The tubes were closely observed and frequently gently tilted to determine the coagulation time. This procedure was carried out with every type of tissue studied, both hemophilic and normal, together with controls of calcium and plasma alone, glycerin alone, and with thromboplastin-Squibb and that prepared in our own laboratory. These reactions were repeated several times and corresponded with the result shown in the accompanying table.

COAGULATION TIME OF PLASMA AND CALCIUM AFTER ADDITION OF TISSUE

	Hemophilic		Normal	
Extracts	Min.	Sec.	Min.	Sec.
Brain	4		3	
Thyroid	10	30	4	
Heart	4	15	4	30
Liver	9	45	5	
Kidney	4	20	3	40
Suprarenal	4	30	3	10
Pancreas	6	30	4	
Spleen	6		5	
Muscle	5		3	15
Bone marrow	6		4	25
Controls				
Oxalated plasma	No coagulation			
Plasma and calcium			8	40
Glycerin			8	30
Thromboplastin			2	(Squibb)
			2	20(Ours)

RESULTS

It will be noted that the normal tissue extracts uniformly accelerate the coagulation time of the calcium plasma, and that most of the hemophilic tissues with the exception of thyroid and liver seem to exert almost the same influence on coagulation. Thyroid gland and liver not only caused a prolonged coagulation time, amounting to two and one-half times the corresponding normal tissues, but actually inhibited the action of the calcium added to the plasma, so that the coagulation of the calcium plasma was prolonged almost two minutes.

These observations were repeated with uniform results, and though admittedly limited to the tissues of one hemophiliac, yet they are strikingly significant, in that there is a possibility that the thyroid and even the liver may secrete an antithrombic substance or enzyme which may be in part, if not principally, the cause of the deranged coagulative mechanism of hemophilic blood. These observations are recorded with the purpose of stimulating further investigation along similar lines, hoping to localize the offending principle causing this now so-called idiopathic disease.

CONCLUSIONS

1. Not only the external tissues, but also the various other tissues of the normal body accelerate blood coagulation.
2. Hemophilic tissues, excepting thyroid and liver, have the same general effect on coagulation as normal tissues exert.

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[1] Morawitz and Lossen: Deutsch. Arch. f. klin. Med., 1908, **94**, 110.

[2] Weil: Presse méd., 1905.

[3] Addis, T.: Jour. Path. and Bacteriol., 1911, **15**, 436.

[4] Howell, W. H.: The Condition of the Blood in Hemophilia, Thrombosis and Purpura, Arch. Int. Med., January, 1914, p. 76; Am. Jour. Physiol., 1912-1913, 1910.

[5] Nolf, Ergebn. d. inn. Med. u. Kinderh., 1913, **10**, 275.

3. Extracts of the thyroid and of the liver of hemophiliacs markedly prolong coagulation of blood.

262 South Seventeenth Street—1703 East Moyamensing Avenue.

ABSTRACT OF DISCUSSION

Dr. William Weston, Columbia, S. C.: In the *treatment of* these purpuric conditions, it may be well to *keep in mind* the marked effect that fresh fruit juices have on the coagulation of the blood. For instance, we know that in scorbutus fruit juices assist markedly in the coagulation of the blood.

RECENT STUDIES IN THE ANATOMY AND PHYSIOLOGY OF TENDONS

THEIR APPLICATION TO THE TECHNIC OF TENDON OPERATIONS *

LEO MAYER, M.D.

NEW YORK

My interest in tendons was first awakened in the year 1912, when, while I was acting as *volunteer in* the clinic of Professor Lange, the problem of preventing postoperative adhesions was assigned as an experimental study to Dr. Henze of New Haven and to me.

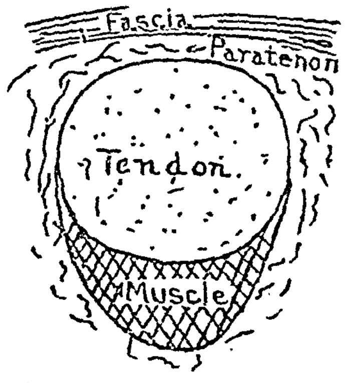

Fig. 1. — Cross-section (diagrammatic) through the tibialis anticus tendon 1 inch above the upper pole of the sheath.

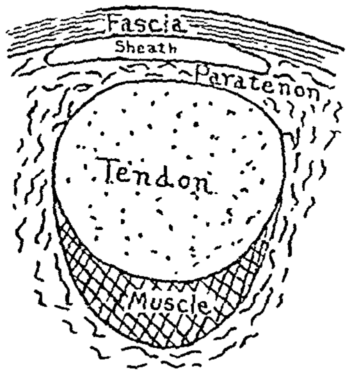

Fig. 2. — Cross-section (diagrammatic) through the tibialis anticus tendon at the level of the upper pole of the sheath.

The problem was one of great importance in Lange's eyes, since, despite his experience in 2,000 operations, the results were frequently impaired by adhesions developing subsequent to the transplantation.

It is, of course, self-evident that the function of the tendon as a means of transmitting the contraction of the muscle to the skeleton is completely inhibited by a single strong adhesion in the same way as the rope of the derrick cannot glide if clamped at a single point. In the course of our experimental investigations, which were conducted chiefly on rabbits, we utilized all manner of membrane, thin tubes of rolled silver, petrolatum, bismuth paste, fascia, peritoneum and a vein as a means of ensheathing the tendon. None of these substances, however, prevented the development of adhesions; in fact, with the exception of the Cargyle membrane, more adhesions were present after their introduction than in control experiments in which nothing was used. Finally we followed the suggestion of Biesalski and utilized the *sheath* of the paralyzed tendon as a physiologic pathway for the transplanted tendon; that is, one tendon was withdrawn from its sheath, cut away from the paralyzed muscle, and the substituting tendon drawn downward by *means* of a guide suture so as to occupy exactly the position of the original tendon. *In all* of the cases observed there was complete absence of adhesions, even when the limb was immobilized for thirty days subsequent to the operation.

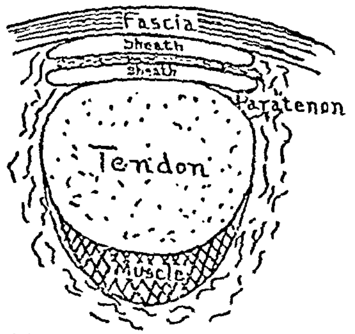

Fig. 3. — Cross-section (diagrammatic) through the tibialis anticus tendon one-half inch distal to the section shown in Figure 2.

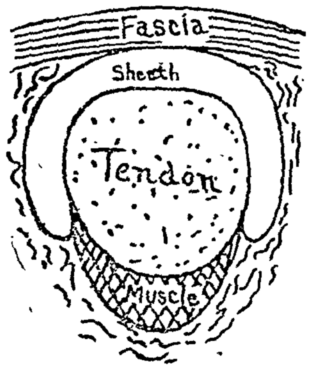

Fig. 4. — Cross-section 1½ inches distal to the section shown in Figure 3.

This clear cut evidence in favor of Biesalski's *method* indicated to me the importance of coordinating the operative technic with the physiology of the structures involved. Just exactly as the normal relationship between tendon and sheath should be maintained, so, too, the normal fascia relationship, the normal tension and the normal fixation of the transplanted tendon should be made as nearly like the normal as possible. When, however, I tried to follow out this line of thought, I found that our knowledge of the physiology and anatomy of tendons was entirely inadequate for the purpose. No one had as yet considered the nature of the gliding mechanism of tendons. In no book, physiologic or surgical, had the subject of tendon tension ever been brought up for discussion. Despite the thousands of tendon operations, some of the simplest facts relative to their anatomy had never been investigated. It was necessary, therefore, before any comprehensive operative technic could be formulated, that these fundamental questions be investigated. The work was conducted by research on the cadaver, animal experimentation and observations on human beings.

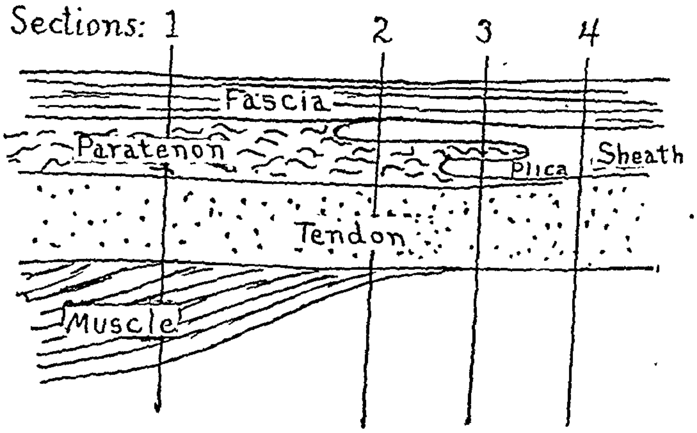

Fig. 5.—Longitudinal section (diagrammatic) of the tibialis anticus tendon, to correlate the preceding cross-sections. Note that the paratenon is prolonged downward into the sheath as a loose fold—the *plica*.

I can best introduce the subject of the anatomy of tendons by a series of cross-sections showing a tendon at various levels above and within its sheath. The first (Fig. 1) shows the tendon about 1 inch above the upper pole of the sheath; note that between the fascia and the tendon is a distinct gap not described in the textbooks. This space is filled with a peculiarly elastic tissue, consisting essentially of fat cells and elastic fibers. This tissue completely surrounds the tendon and the lowermost muscle fibers, and by means of its elasticity allows the tendon to glide freely to and fro beneath the rigid fascia. How great this elasticity is can be seen by incising the fascia and lifting the tendon out of its bed. It will then be seen to stretch from 5 to 7 cm. without rupture of its fibers. It is the important tissue in the gliding mechanism of the tendon; and in every operation on the tendons its presence must be recognized and due emphasis laid on conserving its function.

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* Read before the Section on *Orthopedic Surgery* at the Sixty-Ninth Annual Session of the American Medical Association, Chicago, June, 1918.

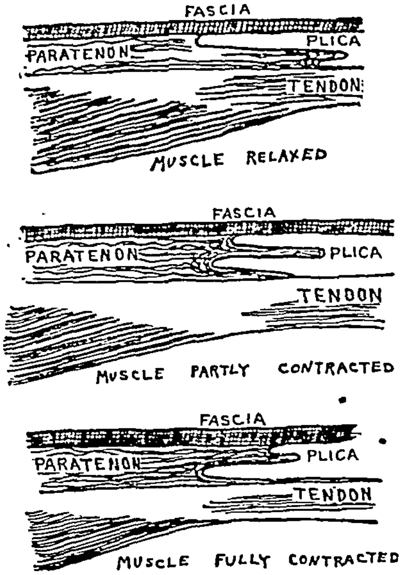

Fig. 6.—Diagrams representing the changes occurring in the form of the sheath during the contraction of the muscle and the consequent gliding of the tendon. Note that the deep pocket of the sheath between plica and tendon increases markedly in length, allowing the tendon to move upward without rupture of the sheath wall.

The next section (Fig. 2) is taken through the upper pole of the sheath. The significant fact is that the gap representing the tendon sheath does not develop between the fascia and the tendon, but between the fascia and this gliding tissue, which I shall henceforth term the "paratenon."

In the next section (Fig. 3), which lies about half an inch distal to the preceding, the sheath is seen to be divided into two portions by a transverse band, the tissue of which is microscopically identical with the paratenon.

In the fourth cross-section (Fig. 4), about 1½ inches distal to the preceding, the tendon sheath is interposed between fascia and tendon and is seen almost to surround the latter. A longitudinal section (Fig. 5) enables us to correlate these four cross-sections. It is evident that the paratenon is prolonged downward into the sheath as a tonguelike structure. The significance of this is appreciated only when the muscle contracts and the tendon moves upward; then it is seen that a kind of invagination occurs (Fig. 6). The deep pocket of the sheath becomes much elongated, thus allowing the tendon to glide, without destroying the continuity of the sheath wall. The essential, of course, is the elasticity of the paratenon which allows this degree of stretching.

By means of simple experiments on dogs the normal tension of tendons was accurately determined. The method consisted in the division of the tendon shortly above its insertion. The tendon ends separated for a distance of from 1 to 2 cm. because of the tension to which they were subjected by the muscular pull; by means of a recording instrument, the proximal tendon stump was pulled downward until brought into apposition with the distal. The degree of force represented the tension to which the tendon was subjected. The figures varied markedly, according to the varying conditions of the experiment; but one fact remained constant, irrespective of the size of the animal or the strength of the muscle: when under anesthesia, the limb was held in such a position that the origin of the muscle and its point of insertion were brought as near together as possible, then the tendon tension equaled 0; in other words, with the tibialis anticus divided and the foot held in the position of calcaneovarus, then under anesthesia the two tendon ends came into exact approximation without the use of any force whatever. This simple physiologic fact is readily applicable to tendon transplantation. The normal tension is restored by holding the limb in such a position as to approximate the origin of the muscle and the new site of tendon implantation.

I can best illustrate the application of the physiologic principle by outlining a typical tendon transplantation; for instance, the transfer of the extensor proprius hallucis for the paralyzed tibialis anticus. The first incision exposes the insertion of the paralyzed tendon. The tendon itself is slit longitudinally and the subjacent bone is traumatized. Against this traumatized surface the transplanted tendon is to be brought since the resulting osteogenic activity of the periosteal cells anchors the transferred tendon firmly in place.

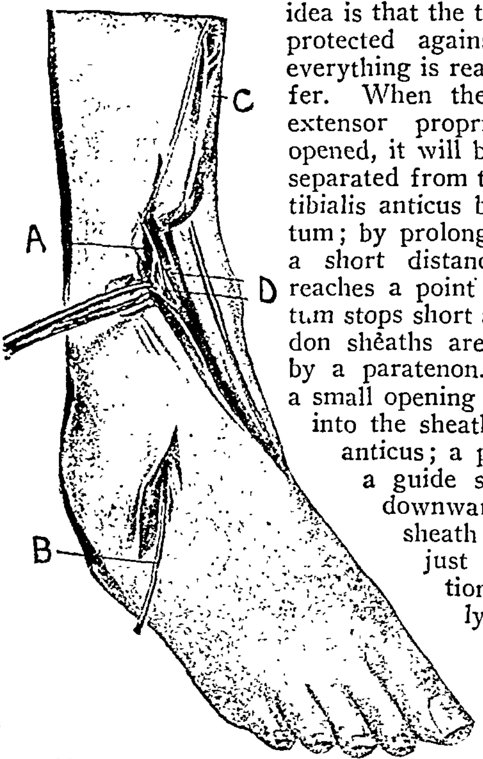

Fig. 7.—Typical physiologic tendon transplantation—transfer of the tibialis anticus for paralytic clubfoot. The probe passing through the sheath of the extensor longus digitorum emerges at the insertion of the peroneus tertius and serves to draw the tibialis tendon downward through the sheath of the paralyzed evertors. *A*, retracted fascia; *B* to *D*, probe passing through sheath of extensor longus digitorum; *C*, tibialis anticus.

The second incision runs along the extensor proprius hallucis. Not the entire tendon but only the upper portion is exposed at first. The idea is that the tendon should be protected against drying until everything is ready for its transfer. When the sheath of the extensor proprius hallucis is opened, it will be seen that it is separated from the sheath of the tibialis anticus by a fascial septum; by prolonging the incision a short distance upward one reaches a point where this septum stops short and the two tendon sheaths are separated only by a paratenon. At this point a small opening is made directly into the sheath of the tibialis anticus; a probe containing a guide suture is passed downward through the sheath and emerges just over the insertion of the paralyzed tendon. By means of this guide suture, the extensor proprius hallucis tendon, which is rapidly freed, is drawn downward through the sheath of the tibialis anticus and anchored firmly in the bed already prepared for it. In fastening it, the foot is held in the position of calcaneovarus and the tendon is pulled on with just enough force to render its course a straight one. Immobilization should not be continued more than three weeks because by that time firm union has occurred. The patient is then allowed to exercise the transplanted tendon, and three weeks later to walk with the transplanted tendon protected from undue tension by an appropriate splint.

The therapeutic results achieved by this method, in the 250 cases in which the operation has been performed in the last three and one half years, have been unusually gratifying.

This brief summary of the principles underlying the physiologic method indicates only in a rough way its application to the treatment of poliomyelitis and paralysis due to gunshot injuries. For further details the reader is referred to my book[1] and to a series of articles published in *Surgery, Gynecology and Obstetrics*.[2] Experience since that time, although it has altered some details, has confirmed me in the view that this method of tendon transplantation offers a valuable means of helping our patients.

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ABSTRACT OF DISCUSSION

Dr. Arthur Steindler, Iowa City, Iowa: I wish to emphasize the importance of the physiologic method of tendon transplantation. Dr. Mayer said something about the clinical results. I can corroborate his statements by my own results, although they were not obtained entirely by his method. I made use of the principles mentioned in a series of about forty cases. The conclusion I can draw is that if the physiologic conditions are observed carefully, if the tendon sheath is either left unharmed, as he does, or reconstructed, as I am doing, according to an earlier suggestion of his, for which I am glad to give him credit; and, furthermore, if the vitality of the tendons is not endangered, and that is the only point, there is no failure of the tendon to work. I mean that it will act from a biologic point of view. I made a survey of my cases and found that it acted in almost every case, barring some cases of infection. With regard to the functional value, it acted functionally satisfactorily in 80 per cent., which is absolutely the converse of what I had found before using this method. One thing which makes me a little doubtful is the question of the dissociation of function. I saw a case in which a tendon transplantation had been performed several years previously and, I believe, successfully, because the tendon acted. After seven years it was, however, impossible for the patient to dissociate function between the two peronei tendons.

Dr. Ethan H. Smith, San Francisco: I should like to emphasize one point, and that is the outcome of tendon transplantation when there is infection. Its importance is well known to the orthopedist, but for the benefit of the general surgeon who is going to do tendon work as the result of military requirements, this point should receive particular attention. Infection is not always absent when a wound is apparently healed; we should be very certain that there is no latent infection before attempting any work on the tendons, because there is nothing that makes so complete a wreck as an infected tendon.

Dr. Charles M. Jacobs, Chicago: In tendon transplantation two important points must be considered: first, the technic, and second, the selection of muscles. In his demonstration Dr. Mayer used the extensor hallucis pollicis to take the place of the tibialis anticus. Notwithstanding the correct technic, the result would prove a failure, because a weak muscle cannot take the place of a strong one. In my opinion, many failures of tendon transplantation are due to the fact that we do not sufficiently consider this fact.

Dr. M. A. Bernstein, Chicago: I have carried on experiments for one year on tendon transplantation, following the technic of Dr. Mayer as closely as possible. My findings were as follows: In transplanting tendons into the sheath of other tendons there followed a traumatic inflammatory reaction, manifesting itself in infiltrative and proliferative change in the endothelial lining of the sheath. This inflammatory reaction depended on the amount of trauma of the tendon and the amount of adhesion, varying with the duration of immobilization of the limb. The microscopic findings are as follows: A proliferation of cells and an exudation of blood into the sheath, with fixation to the tendon to the peritendineum externum. I believed that adhesions, if permitted to organize, would produce ultimate fixation of the tendon. So we carried on experiments along different lines, transplanting the tendon with the sheath and the surrounding fascia, and made examinations varying from eight to twenty-one days after operation. We found, in the cases in which we transplanted the tendon with the sheath and surrounding tissue, that the proliferative change was not so extensive as in the other experiments. Even if there occurred a slight infection of the limb, the infiltrative change took place in the surrounding tissue, but did not extend down to the sheath. The question, therefore, comes up whether the sheath is essential in the transferring of tendons, and whether, if the tendon is transplanted without the sheath, through the sheath of another tendon, if the trauma brought about by rubbing the tendon over the wall of the sheath does not set up a traumatic inflammatory reaction with subsequent adhesions.

Dr. Leo Mayer, New York: Dr. Steindler and I disagree on only one point. He believes that the tissue which connects the tendon with the bone within the sheath, and through which the blood vessels run to the tendon (the mesotendon), should be kept intact in order to maintain the life of the tendon. Of course, it is a good thing to do this; but it is not absolutely necessary, because I have had a chance to observe that the tendon retains its vitality even when these blood vessels are divided. Of course, absolute adherence to physiologic principles in the other steps of the operation is required in order to secure success. The tendon must not be allowed to dry, and the time of exposure must not be more than half a minute. If everything is ready beforehand for the transfer of the tendon it is possible to accomplish this. The tendon gets enough blood vessels through the lower fibers of the muscles to keep it alive, since there is abundant anastomosis within the tendon.

Regarding the transplantation of the peroneus longus, I think that that is the best operation for paralytic valgus, since it converts a strong everter into an inverter of the foot. The trauma is more than offset by the function we secure.

Regarding infection, I endorse what Dr. Smith said. Never operate when there is infection. In the case of gunshot wounds, one should wait at least four months after the injury before operating.

In regard to the selection of the tendon, the point of Dr. Jacobs is well taken. Be very careful to select the right tendon. Do not send a boy to do a man's work. The extensor proprius hallucis should be transplanted for the tibialis anticus only when a strong tibialis posticus is present.

Dr. Bernstein's reports are exceedingly interesting, and I am glad that experimental work is being done to find out further details concerning the physiologic method. There is a certain amount of inflammatory reaction subsequent to the operation. If you draw a tendon down through the sheath of another tendon, there is bound to be some rubbing; but if you are careful it is not excessive. If you fix the tendon effectively you can begin active motion of the muscle three weeks after the operation and easily tear any adhesions that are forming. This occurred in one of my patients.

In operations at the knee there is no opportunity to use the sheath method. There are no tendon sheaths at the knee joint, but we can utilize physiologic principles. In the first place, we can maintain the normal tension of the tendon. The technic of doing this is simplified by inserting a few sutures in the quadriceps tendon which pull the patella upward. In the second place, you can render the course of the tendon as nearly normal as possible by not interfering with the paratenon, which surrounds the tendon. In these two respects the operation differs from that previously performed.

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[1] Mayer, Leo: The *Orthopedic Treatment of Gun-Shot Injuries*, Philadelphia, W. B. Saunders Company.

[2] Mayer, Leo: Surg., Gynec. and Obst., 1916, **22**, 182, 298, 472.

THE BACTERIOLOGY OF MEASLES[*]

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Many attempts have been made to find the cause of measles and to study the bacteria that produce its complications. It may be of interest to review this work now, and for the sake of clearness of presentation the chief results may be discussed briefly under the headings of protozoa, miscellaneous, bacilli and cocci.

PROTOZOA

Bodies having some resemblance in form to protozoa have been observed in measles. Behla[1] believed that he could see such bodies in the blood; Doehle[2] described peculiar bodies in the leukocytes; and in blister-fluid Rosenberger[3] discovered minute refractile bodies with a rapid darting motion. Little if any significance can be assigned to the observations by Behla and Rosenberger, because they have not been confirmed and extended. Doehle's bodies do not appear to be at all peculiar to measles, being present in a wide variety of conditions (Glomset[4] and others).

MISCELLANEOUS

Under the head of miscellaneous come observations so fragmentary and inconclusive or made with such comparatively crude methods that the results now seem to have little or no value. Keating[5] states that Formad and he saw many micrococci in the blood in malignant cases of measles, during life as well as after death, the cocci being free and also within leukocytes. I place here the micrococcus which Manfredi[6] obtained from measles pneumonia and which caused "progressive lymphomas" in animals; and also the bacillus which Canon and Pielicke[7] in 1892 found in stained preparations of the blood, sputum, and the nasal and conjunctival secretions of fourteen measles patients. They regarded this bacillus as the cause of measles. It was an unevenly staining bacillus, gram-negative, variable in size, and though often present in large numbers, it was not obtained in pure culture. At about the same time Czaikowski[8] found in measles blood a similar bacillus, which he was able to cultivate, however, the colonies being like dewdrops and coalescing; but his work has not been confirmed. Combas and Giarrè[9] were unable to detect any microbes in measles blood with the methods used by Canon and Pielicke; Pacchioni[10] also failed; and others soon expressed doubts as to the value of this work.

Ostrovsky[11] cultivated an ovoid coccus or short bacillus, gram-negative, from the blood, saliva, eye and nasal mucus in measles.

In the spots in measles and in the nose, and occasionally also elsewhere, Mayer[12] found a small gram-negative bacillus, mostly in pairs, not pathogenic for animals, and forming small fluorescent colonies on agar. Mayer regarded this bacillus as a secondary invader.

In sections of lungs with measles pneumonia, Kuleysha[13] found a small bacillus, which, when injected into the blood of animals, caused changes in the lungs like those in measles. He believed that this bacillus was the cause of measles, and that pneumonia is a part of the disease, not a secondary complication.

From the blood in one case of measles von Nissen[14] cultivated a gram-positive bacillus which he called *B. roseus* because it formed red colonies.

Cannata[15] is said to have found a number of different kinds of bacteria in bronchopneumonia in measles, *Micrococcus tetragenus* and *Staphylococcus albus* being the most frequent.

Borini[16] cultivated a small, thin, gram-negative bacillus from the blood, bronchial mucus, and the conjunctiva of children at the height of the fever in measles. This bacillus grew best in vacuum cultures, forming punctiform, transparent, grayish white colonies which gradually coalesced; it caused bronchopneumonia and general invasion on tracheal, pleural and peritoneal injection of rabbits. It was pathogenic also for dogs. No further reports about this bacillus have appeared.

Lesage,[17] in 1900, described a very small, gram-negative micrococcus, which grew well on bloodless agar, and which he obtained from the nose and throat, less often from the blood, in measles.

Gundobin[18] cultivated a bacillus from the blood in sixty of sixty-four cases of measles and claimed good results from the serum of goats and horses injected with this bacillus. Ivanoff[19] described a short, motile, gram-negative, unevenly staining bacillus in the blood and mucous secretions in measles.

A few years ago Costa[20] announced that in eight consecutive cases of measles he found a blastomyces in the blood, but nothing further has been heard of it.

BACILLI

The principal bacilli that have been described in connection with measles may be grouped roughly as diphtheroid and as influenza or influenza-like bacilli.

Diphtheroid Bacilli.—Barbier[21] found the blood sterile, but in the conjunctival secretion he found a bacillus like the diphtheria bacillus, sometimes alone and sometimes associated with other bacilli. In the mouth and nose he noted mostly streptococci. Here belongs probably also the bacillus with club shaped and irregular forms described by Arsamasskoff[22] in the blood, the throat, the eye, and in pneumonic foci in measles.

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[*] From the John McCormick Institute for Infectious Diseases.

[1] Behlà, R.: Der Erreger der Klauen und Maulsuche nebst Bemerkungen über die akute *Exantheme* beim Menschen; Centralbl. f. Bakteriol., 1893, **13**, 50; Ueber das Vorkommen von Masern bei Tieren, ibid., 1896, **20**, 561.

[2] Doehle, P.: Zur Aetiologie von Masern, Pocken, Scharlach, Syphilis, Centralbl. f. Bacteriol., 1892, **12**, 906.

[3] Rosenberger, R. C.: Recent Studies in Measles, Am. Med., 1906, **12**, 139.

[4] Glomset, D. J.: Intraleukocytic Bodies in Scarlet Fever, Jour. Infect. Dis., 1913, **11**, 468.

[5] Keating, J. M.: The Presence of a Micrococcus in the Blood of Malignant Measles, Philadelphia Med. Times, 1881, **12**, 765.

[6] Manfredi: Ueber einen neuen Micrococcus als pathogenes Agens bei infectiösen Tumoren: Seine Beziehungen zur Pneumonia, Fortschr. d. Med., 1886, **4**, 713.

[7] Canon and Pielicke: Ueber einen Bacillus im Blute von Masernkranken, Berlin. klin. Wchnschr., 1892, **29**, 377.

[8] Czaikowski: Gazeta lekarska, 1892; Centralbl. f. Bakteriol., 1895, **18**, 517.

[9] Combas and Giarrè: Ricerche batt. sul sangue e sulle urine in alcune malattie infettive del' infanzia, Arch. ital. di clin. med., 1897.

[10] Pacchioni, D.: Ricerche batt. nel morbello, Acte de Accad. med. fis. florent., 1902, **5**, 20.

[11] Ostrovsky, E.: Bactériologie de la rougeole, Compt. rend. Cong. int. de med Moscow., 1899, **2**, Sect. 3, p. 174.

[12] Mayer, A.: Zur Bakteriologie der Masern, München. Med. Wchnschr., 1904, **51**, 733.

[13] Kuleysha: Measles Pneumonia, Dissertation, 1898.

[14] Von Nissen, F.: Der Masernbacillus, Arch. f. Dermat. u. Syph., 1902, **60**, 429.

[15] Cannata, S.: Ricerche batteriologiche nelle bronco-polmoniti morbillose, Clin. bed. ital., 1907, **46**, 406; Centralbl. f. Bakteriol., I, Ref., 1909, **42**, 203.

[16] Borini, A.: Ricerche batteriologiche sul morbillo, Riforma med., 1905, **21**, 674; Bakteriologische Untersuchungen über den Morbillus, Centralbl. f. Bakteriol., I, O., 1906, **40**, 194.

[17] Lesage: Bull. et mém. Soc. méd. d. hôp. de Paris, 1900, **3**, 9.

[18] Gundobin, N. P.: Bacteria of Measles, and the Serum Against That Disease, Vrach Gaz., 1905, **12**, 1029.

[19] Ivanoff, A. A.: Bacteriology of Measles, Med. Obozr., 1905, **64**, 320.

[20] Costa, S.: Sur la présence d'un blastomycete dans le sang des rougeoleuse (note préliminaire), Compt. rend. Soc. de biol., 1913, **74**, 62.

[21] Barbier, H.: Bactériologie de la rougeole, Sem. méd., 1897, **17**, 37.

Zlatogoroff[23] made cultures of the blood of twenty-four patients at the height of measles, inoculating from 25 to 150 c.c. of liquid medium with about 1 c.c. of blood, and in the cultures from seventeen there grew a thick gram-positive bacillus with rounded ends and arranged usually in pairs or small groups. Subcultures do not seem to have been successful. In a few instances similar bacilli were seen in stained preparations of the blood. The results of injection of the cultures into animals were not definite. From the conjunctival secretion Zlatogoroff usually obtained what he calls the xerosis bacillus and a similar but smaller gram-positive bacillus.

In the course of a study of the pneumonia of measles, Ciaccio[24] found a gram-positive, unevenly staining bacillus in sections of the lymph nodes, the spleen, the lungs and other organs of eight patients. In the lungs were also cocci, notably what he regarded as pneumococci.

Armand-Delille[25] reports the recovery of diphtheria bacilli or diphtheroids from the throat in about 42 per cent. of small children with measles. He states that the bacilli were rarely virulent, and that when virulent there was nearly always a membrane present.

Influenza Bacilli.—From about 1899 to about 1907 there appeared several reports which indicate that at least under certain circumstances influenza or influenza-like bacilli frequently occur in measles. In 1899, Paltauf[26] demonstrated the presence of influenza bacilli in bronchopneumonic areas in measles, calling attention at the same time to the presence also of cocci (pneumococci and streptococci). Albrecht and Ghon[27] noted the same thing a little later, and Giarrè and Picchi,[28] Jehle,[29] Süsswein,[30] Giarrè and Carlini,[31] Pacchioni and Francioni,[32] and Davis[33] followed with more extensive observations. In measles patients, Pacchioni found hemolytic bacilli in the eye, in suppurative arthritis, meningitis and pleuritis, and also in the heart blood after death. Giarrè and Picchi, found a minute gram-negative bacillus, which grew only on blood agar and best on pigeon blood agar, in the bronchial mucus and the conjunctival secretion in measles. Hiarri[34] examined the blood in measles with negative results, but in the eye he found an influenza-like bacillus and a diplostreptococcus pathogenic for white mice. He found the influenza-like bacillus also in the bronchial mucus of eight cases.

It may be of interest to note here that before any of these observations had been made, Cornil[35] found a great number of small bacilli as well as cocci in the lungs of an infant that died from bronchopneumonia consecutive to measles and whooping cough. Thaon[36] also found bacilli and cocci in pairs and short chains in measles pneumonia, the cells in the alveoli being filled with them; he regarded these organisms as the cause of the bronchopneumonia that was present in every measles patient dying in a certain hospital the air in which he believed was contaminated.

Jehle found the bacillus of influenza in the eye commonly and in the blood after death in fifteen of twenty-three cases of measles, and also but not so commonly in scarlet fever and in varicella. He believed that these diseases in some way favor general infection with the influenza bacillus when it is present on the tonsils or in the bronchial mucus, and that this form of secondary infection may cause a high mortality. Süsswein found the influenza bacillus in the nose of measles patients during life, and after death in the bronchial contents and the pneumonic and pleural exudate; and as influenza infection appeared to him to be a frequent and dangerous complication of measles, he recommended separation of patients with mixed infection from those with pure measles, in order to lessen the number of deaths. Liebscher[37] also found influenza bacilli in measles, during life and after death, though not so often as Süsswein; but he notes that the patients that had the bacillus in the nose gave a higher death rate than those that did not have it.

Continuing their work, Giarrè and Picchi found a hemophilic bacillus as the predominating organism in the conjunctival, nasal and bronchial secretions. It was a short, thin, gram-negative bacillus, growing only on agar with pigeon blood. In seventeen instances in which the blood was examined before or after death, this bacillus was found only three times. Later Giarrè and Carlini made a special study of the blood for this bacillus in twenty-four cases of measles, mostly in the eruptive period, and in six children that had had measles; the cultures from the latter were all negative, but in twenty-one of the measles patients the cultures were regarded as successful, although subcultures were obtained only twice. In stained preparations of the centrifugate of the laked blood, they report that they saw the bacilli in practically every instance of measles. In seven instances the bacillus in question, which they regard as the same as that described by Giarré and Picchi[28] in 1900, were grown from the eye in measles and studied in subcultures. They grew the pneumococcus from the blood three times and observed it in stained blood specimens five times.

Pacchioni and Francioni, however, failed to grow hemophilic bacilli from the blood in measles. They examined twenty-five patients, mostly just before the eruption, inoculating blood drawn from the veins on various mediums. A hemophilic bacillus appeared only once, and that was in the case of a patient who later died of bronchopneumonia. In seven instances, cultures developed of a large, gram-negative coccus, shaped like the coffee-bean, and regarded as *M. catarrhalis*. They also failed to find bacilli in centrifugates of laked measles blood, using the same method as Giarrè and Carlini, and they suggest that the latter probably erred in their interpretation. As they found the blood sterile in the early stages of measles,

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[22] Arsamasskoff: Gazeta Botkina, 1898; Centralbl. f. Bakteriol., 1899, **25**, 831.

[23] Zlatogoroff, S. J.: Zur Mikrobiology der Masern, Centralbl. f. Bakteriol., I, O., 1904, **37**, 249.

[24] Ciaccio, Carmelo: Beitrag zur pathologischen Anatomie und zur Mikrobiologie der Masern, Virchows Arch. f. path. Anat. 1910, **100**, 378.

[25] Armand-Delille, Paul: Examen bactériologique de la gorge au point de vue du bacille diphtherique et pseudodiphtherique dans 75 cas de rougeole chez l'enfant, Arch. de méd. d. enf., 1902, **5**, 202.

[26] Paltauf, R.: Wien. klin. Wchnschr., 1899, **12**, 576.

[27] Albrecht and Ghon: Beitrag zur Kenntniss der Morphologie und Pathologie des Influenzabacillus, Ztschr. f. Heilk., 1901, **22**, 29.

[28] Giarrè and Picchi: Jahrb. f. Kinderh., 1900, **52**, 890.

[29] Jehle: Ztschr. f. Heilk., 1901, **22**, 190.

[30] Süsswein, Julius: Die Influenza bei Masern, Wien. klin. Wchnschr., *1901*, **14**, 1149.

[31] Giarrè and Carlini: Ueber die Anwesenheit eines hemophilen Bacillus im Blute Masernkranker, Arch. f. Kinderh., 1907, **46**, *262*.

[32] Pacchioni, D., and Francioni, C.: Bakteriologische Untersuchungen an Masern: Beitrag zur Aetiologie und Pathogenese der Masern, Jahrb. f. Kinderh., 1908, **68**, *391*.

[33] Davis, D. J., Bacteriology of Whooping Cough, Jour. Infect. Dis., 1906, **3**, 1.

[34] *Hiarri:* Ueber die Bakteriologie der Masern, Jahrb. f. Kinderh., 1902, **55**, 109.

[35] Cornil and Babes: Les bactéries, 1890, **2**, 274; Contribution a l'étude des inflamations liées à la présence des microbes, *péripneumonie* contagieuse, pneumonie rubéolique, etc., Arch. de phys., 1883, **15**, 227.

[36] Thaon: Des broncho-pneumonies de l'enfance et leur microbes, Compt. rend. Soc. de *biol.*, 1885, **37**, *617*.

[37] Liebscher, Karl: Ueber Influenzabacillen—Befunde bei Masern und Scharlacherkrankungen, Prag. med. Wchnschr., *1903*.

Pacchioni and Francioni hold that in uncomplicated measles there probably are no bacteria in the blood, and that in the instances in which bacteria actually were cultivated from the blood it concerned secondary infections due to a weakened resistance, hemophilic bacilli seeming to be the most frequent cause of such infection.

Reisz and Gins[38] observed influenza bacilli in the blood in a nursling with bronchopneumonia after measles.

In this country, Davis seems to have been practically the only one who has studied the question of the relation of the influenza bacillus to measles. He examined twenty-two uncomplicated cases, making cultures and smears from the sputum, and when sputum was not obtainable, from throat swabs. Only one examination was made in each case, but all the examinations were made during the eruptive stage, cough being present as a rule. Influenza-like bacilli were isolated in pure culture in thirteen of the twenty-two cases; in four such bacilli predominated, but sometimes there were only very few. Streptococci and pneumococci were present on every plate, the latter being the more numerous. Davis found influenza-like bacilli in the throat of only two of twenty normal persons.

It should be noted, however, that Cole's[39] mouse inoculations with the sputum of measles bronchopneumonia, the main result of which was the recovery of hemolytic streptococci in sixteen of seventeen cases, in eight of the cases also gave *B. influenzae*. Further, that while the sputum cultures in thirty cases all yielded hemolytic streptococci, in thirteen of the cases the influenza bacillus also was found. This bacillus was present too in the lungs and the heart blood after death in some cases together with streptococci, but these cases did not seem to differ from others in which only streptococci were found.

The comparative frequency of *B. influenzae* is of considerable interest, and it may be well in the further study of the bacteriology of measles not to lose sight of this bacillus.

COCCI

Streptococci.—The pioneer work on the bacteriology of measles was done by Babes[40] about 1880. In stained preparations of the nasal, conjunctival and bronchial secretions, of the blood of the skin in eruption, Babes found small cocci in pairs and short chains. In one case the blood contained also a short bacillus. In sections of the skin removed during life on the second day of the rash he saw micrococci in the dilated capillaries of the papillae. Agar cultures of the blood from the skin, of lymph nodes, and of inflammatory products of the lungs and pleura, gave streptococci like the streptococci in pus; occasionally the pulmonary and pleural exudate would develop in culture an encapsulated microbe that killed rabbits. In sections of lungs with measles pneumonia, in which Babes described the interstitial lesions recently emphasized again by MacCallum,[39] large numbers of cocci were found. Commenting on these observations, Cornil and Babes discuss briefly the question whether pneumonia may be an expression of a generalized measles; they held that of the bacteria in the lesions consecutive to measles, the streptococcus merited the most attention.

Tobeitz[41] found groups and chains of cocci in and about the bronchi in measles pneumonia.

In sections as well as cultures from bronchopneumonia in measles, Guarnieri[42] obtained streptococci regarded as identical with *Streptococcus erysipelatis.*

Méry and Boulloche[43] found pneumococci in the saliva of 29 per cent. and streptococci in 23 per cent. of young children with measles, these being larger percentages than in the case of well children. They reason that in measles there occurs a specific lesion in the lungs—an enanthem—on the basis of which secondary bronchopneumonia, due to a superficial, descending, respiratory infection, may develop. To guard against this bronchopneumonia, mouth cleanliness is recommended.

After death from measles, Slawyk[44] found streptococci in the blood in fifteen of sixty-eight cases and only two or three other bacteria scatteringly. The streptococcus cases included nine cases of enteritis, two of bronchopneumonia, two of empyema, etc.

Pospischill's[45] contention that streptococcus infection in measles and varicella usually is in reality a septic scarlet fever has not received any notice.

In scarlet fever, measles and other acute infectious diseases, Hlava[46] isolated a streptococcus, which formed a homogeneous capsule when grown on mediums with a high saccharose content, and which he called *Leuconostoc hominis.* Hlava regarded the coccus as different from *Streptococcus pyogenes* and suggested that possibly acute infectious diseases are caused by different forms of this coccus, which he obtained from the throat and nasal secretion of all the eight measles patients he studied and twice from the blood. He found streptococci also in sections of the lungs and of other organs in measles bronchopneumonia.

In forty-five cases of simple angina complicating measles in adults, Simonin[47] found streptococci as the predominating organism in the throat in twenty-five and staphylococci in sixteen. The pneumococcus was found only rarely.

In otitis after measles, Albesheim[48] found streptococci and staphylococci in pure culture and also associated with a gram-positive bacillus.

Schottelius[49] found *Staphylococcus aureus* in the conjunctival secretion of fifty-one cases of eighty examined and also streptococci, but not so often. In the lungs and spleen of children that had died from measles, a streptococcus was found regularly, occasionally associated with other bacteria.

Folger[50] and Eckert[51] each describe two cases of fulminant streptococcus sepsis in measles, such apparently being rare occurrences.

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[38] Reisz, E., and Gins, H. A.: Influenza-Bakteriaemia, Centralbl. f. Bakteriol., I, Ref., 1912, **53**, 135.

[39] Cole, Rufus, and MacCallum, W. G.: *Pneumonia at a Base Hospital,* The Journal A. M. A., April 20, 1918, p. 1146. Cole, Rufus: Prevention of Pneumonia, ibid., Aug. 24, 1918, p. 635.

[40] Babes: Adatok akangaro és a kangaros tidolob koroktanatioz, Orvosi hetilap, 1881.

[41] Tobeitz: Die Morbillen, Arch. f. Kinderh., 1887, **8**, 322.

[42] Guarnieri, G.: Streptococco nella bronchopulmonita morbillosa, Bull. d. r. Academia medica di Roma, 1886-1887, 13; Centralbl. f. Bakteriol., 1888, **3**, 205.

[43] Méry, H., and Boulloche, P.: Recherches bactériologiques sur la saliva des enfants atteints de rougeole, Rev. mens. d. mal. de l'enf., 1911, **9**, 154.

[44] Slawyk: Bakteriologische Blutbefunde bei infektiös erkrankten Kindern, Jahrb. f. Kinderh., 1901, **53**, 505.

[45] Pospischill: Rubeola und Doppelexanthem, Jahrb. f. Kinderheilk., 1904, **59**, 723.

[46] Hlava: Leuconostoc Hominis in seine Rolle bei den akuten exanthematischen Krankheiten, Centralbl. f. Bakteriol., I, O., 1902, **32**, 263.

[47] Simonin: Les angines banales chez les rougeoleux adultes: étude clinique et bactériologique, Bull. et mém. Soc. méd. d. hôp. de Paris, 1903, **3**, 20, 83.

[48] Albesheim: Beitrag zur Bakteriologie der Masernoitis, Arch. f. Ohrenh., 1903, **53**, 89; Centralbl. f. Bakteriol., I, Ref., 1903, **32**, 247.

[49] Schottelius, A.: Bacteriologische Untersuchungen über Masern Konjunctivitis, München. med. Wchnschr., 1904, **51**, 378; Centralbl. f. Bakteriol., I, Ref., 1904, **35**, 485.

[50] Folger: Sepsis nach Masern, Jahrb. f. Kinderh., 1897, **46**, 49.

[51] Eckert: Sepsis nach Masern, Charité-Annalen, 1909, **33**, 182.

Craig[52] reports an outbreak of measles in a military camp involving eighty-nine cases, in twelve of which bronchopneumonia developed with ten deaths. In nine of ten fatal cases there were empyema and abscesses of the lungs. In all the fatal cases a rapidly growing streptococcus was cultivated from the lungs and the spleen, accompanied in six instances by the pneumococcus, in three by staphylococci, and in one by *B. proteus*. Craig found severe lesions—hemorrhages, focal necrosis, hyaline degeneration—in all the organs, and emphasizes the virulent nature of the infection.

Menschikoff[53] made a systematic bacteriologic study of sputum, nasal mucus, conjunctival secretion and ear discharges and blood in measles. Diplococcal forms predominated in the ear and the eye, and pneumococcus-like bacteria were grown from the blood in nine of sixty-one cases. On hemoglobin-agar plates the sputum gave deep brown colonies of a diplostreptococcus (*Diplostreptococcus brevis*) which he regarded as distinct from the pneumococcus; this being the only bacterium present constantly, he suggested that it may play the same rôle in measles as the streptococcus in scarlet fever. Menschikoff also isolated a gram-negative bacillus which grew only on hemoglobin-agar or blood-agar mediums.

Eyre[54] studied twenty cases of bronchopneumonia in measles and obtained the pneumococcus in pure culture four times, the streptococcus five times, the pneumococcus mixed six times, and the streptococcus mixed five times, mostly the one with the other but also with the staphylococci, influenza bacilli, etc. The examinations were made usually a few hours after death, but sometimes during life on aspirated material.

Lorey[55] seems to have been the first to use blood agar in the study of the bacteriology of measles. He examined the throat and made blood cultures in 150 cases; the tonsils gave hemolytic streptococci and in many cases also diphtheria bacilli and pneumococci; the blood in fifteen cases gave cultures of streptococci and in seven others also pneumococci, colon bacilli, paratyphoid bacilli, etc. In the middle ear discharges there were mostly streptococci. Lorey holds that the streptococcus is the most dangerous invader not only in scarlet fever but also in measles, and that probably the variations in the severity of measles epidemics are due to variations in the spread and invasiveness of streptococci, which may be spread by the hands of nurses, by playthings, eating utensils, etc., as well as by droplets. Lorey recommends that in hospitals children with streptococcus infection be isolated.

Recent observations indicate clearly that the hemolytic streptococcus has been the principal cause of the outbreaks of bronchopneumonia following measles in our military camps during the past year (Irons and Marine,[56] Cole and MacCallum, Levy and Alexander,[57] Cumming, Spruit and Lynch,[58] and Dick[59]). Cole reports that hemolytic streptococci were present in cultures of sputum coughed up from the deeper parts of the respiratory tract in the thirty cases of postmeasles bronchopneumonia examined, and mouse inoculations with such sputum from seventeen cases yielded streptococci in sixteen. Blood cultures during life in fifteen cases gave hemolytic streptococci twice. Of the thirty cases, death occurred in fourteen at least, and in all hemolytic streptococci were found in the affected parts of the lungs and in the pleural exudate in practically pure culture; the blood also usually contained hemolytic streptococci. MacCallum found the abdominal organs free from streptococcal invasion, but in the areas of interstitial bronchopneumonic lesions, which were characteristic of streptococcal bronchopneumonia, streptococci were present on the pleural exudate and in the bronchi, and in the purely lobular pneumonic areas they were often present in amazing numbers in the exudate. It appears as if the streptococcus infection in these cases was less violently virulent than in the cases described by Craig in which there were severe lessions—hemorrhages and necrosis—in the abdominal organs. This difference might be explained as the result of a somewhat greater parasitism on part of the strains concerned in the cases studied by Cole and MacCallum.

That nonhemolytic streptococci also may cause complications of a serious nature in measles is indicated in the report by Lathrope[60] of a series of cases of acute mastoiditis, forty-four of which followed measles (either directly or within a month after dismissal from the hospital), and in which the dominant organism seemed to be of the *S. viridans* type.

How are measles patients infected with hemolytic streptococci? The facts at hand point directly to droplet, contact and dust infection by way of the throat. It appears that hemolytic streptococci may spread easily in military camps and in measles wards when special precautions are not enforced. Irons and Marine found that, during a period of respiratory infections, hemolytic streptococci developed in the throat cultures of about 70 per cent. of healthy soldiers. Levy and Alexander obtained hemolytic streptococci from the throat in 14.8 per cent. of strictly fresh recruits; but in an organization in which most of the men had been in service about six months, the number of streptococcus carriers was no less than about 80 per cent. Of the measles patients admitted to the base hospital of this camp, most of them coming from the organization just mentioned, 77 per cent. were carriers of hemolytic streptococci, and the complications occurred almost exclusively among the streptococcus carriers, bronchopneumonia with empyema due to streptococci being by far the most frequent and the most important. Cumming, Spruit and Lynch report that while 35 per cent. of measles patients had hemolytic streptococci in the throat, this was the case in only 6 per cent. of healthy soldiers. Cole and his associates found that in a measles ward 56.5 per cent. of the patients harbored hemolytic streptococci in the throats as compared with 21.4 per cent. in a ward for patients suspected to be tuberculous. They found the hemolytic streptococcus in the throat of 11.4 per cent. of the measles patients on admission; after from three to five days in the ward in 38.6 per cent. and after from eight to sixteen days in 56.8 per cent. These valuable observations all point unmistakably to the ease with which the hemolytic streptococcus may pass from carrier to noncarrier and in the measles convalescent set up bronchopneumonia and empyema. In connection with this postmeasles streptococcus infection, it is of interest to recall that Tunnicliff found the phagocytic power of the leukocytes for streptococci reduced in the leukopenic stage of measles, and MacCallum notes that in the lung lesions he studied there was not free phagocytosis of streptococci. We know that in measles the tuberculin and other allergic reactions are enfeebled and even suppressed, and it may be that the frequency of streptococcus infection in this disease depends in some degree on reduction in the powers to react against streptococci.

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[60] Lathrope, G. H.: Acute Mastoiditis as a Complication of Infectious Diseases, The Journal A. M. A., Aug. 10, 1918, p. 451.

The Tunnicliff Diplococcus.—Using anaerobic methods, Ruth Tunnicliff[61] recently has cultivated a coccus from the blood during the early stages of measles in forty-two of fifty cases, mostly in children.

It appears that at the height of measles, diverse bacteria may develop in cultures of the blood by special methods. Thus Tunnicliff in her series obtained examples of aerobic and anaerobic diphtheroid bacilli, filamentous organisms, spirilla, pigment and spore-forming bacilli, and staphylococci. Similar organisms occur in the throat, nose and eye.

The coccus in question seems to be most numerous in the blood shortly before the rash comes out and to disappear when the rash fades. Aerobic cultures and anerobic fluid cultures gave no results, the best results being obtained with semicoagulated horse serum and with whole blood in ascites glucose agar in the form of shake cultures. As a rule growth would appear in from five to fifteen days at 37 C. In subcultures the coccus may grow under aerobic conditions, when it forms small, greenish, as a rule nonhemolytic colonies on blood agar, the growth on glucose agar being moist and more profuse. A small coccus when first isolated, it passes Berkefeld N filters, but in subcultures it becomes somewhat larger. It is gram-positive and occurs as single cocci, especially as round or flattened diplococci, and in short chains. It ferments glucose, saccharose and maltose, but not inulin, salicin or raffinose.

Tunnicliff has isolated this coccus from the throat in measles, also from the nose and eyes, and in a single instance from the ear. Early in the attack, smears from the tonsils and anterior pillars may show large numbers of diplococci, like those in the cultures, the picture being different from that in similar smears from cases of scarlet fever and of rubella. For this purpose the smears may be fixed with heat, stained a few seconds with carbolgentian violet, washed and dried.

Extensive animal experiments with the coccus or its products have not been made, but it kills rabbits without causing any special changes, and caused leukopenia in a monkey. In regard to its immune reactions, Tunnicliff reports a rise in the opsonic index of the blood serum in measles as the symptoms subside, lasting from one to four days, and at this time the serum also contains complement-fixing bodies in feeble concentration. Tunnicliff and Brown[62] find that specific agglutinins and opsonins develop in the blood of rabbits injected with the coccus, but agglutinin tests are difficult because the coccus clumps spontaneously, and consequently the opsonin test is the best method yet known to differentiate this coccus from other cocci with similar cultural and morphologic characteristics.

Whatever the relation of this coccus to measles, the results just sketched call for further work along various lines.

SUMMARY

From this review it appears that the chief bacteria to engage the attention in connection with measles at present are: (1) the diplococcus found by Tunnicliff in the blood early in the attack and in the throat and nose; (2) influenza bacilli, and (3) hemolytic streptococci. As opsonins and probably other bodies specific for the Tunnicliff diplococcus come into the blood in the course of the measles attack, this coccus must be of some significance, but the exact significance we have still to learn. While hemolytic streptococci seem to predominate overwhelmingly in the bronchopneumonia and other allied acute processes in measles, influenza bacilli are found so frequently in the throat secretions and in lung lesions that doubt arises as to their harmlessness. Hence the part played by these bacilli in measles should be studied further. As hemolytic streptococci may spread rapidly among measles patients, and largely it would seem by droplet and throat infection, the best way at hand to avoid the most serious complication of measles, namely, streptococcus bronchopneumonia, is early isolation of the patient under conditions that protect against infection from persons, including fellow patients, that may harbor streptococci. Such isolation protects against other infections (pneumococcus, influenza bacillus) also. The possible danger of streptococcus infection by way of food should not be overlooked. Finally, it is evident that the immunology of the streptococci concerned, their unity or plurality, their changes in virulence, and other problems require continued investigation.

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[61] Tunnicliff, Ruth: Observations on Bacteriology and Immune Reactions of Rubeola and Rubella, Jour. Infect. Dis., 1918, **22**, 462; Observations on Throat Smears in Measles, Rubella (German Measles) and Scarlet Fever, The Journal A. M. A., July 13, 1918, p. 104.

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The Health of Women in Munitions Manufacturing.—Women less than 23 years old are better fitted physically for the heavier work of munitions manufacturing than those further along in years, according to the results of an investigation of conditions in English factories made by Major Greenwood of the welfare and health section of the Ministry of Munitions. The investigation related to about 40,000 employees of eighteen representative factories in Great Britain. It was found that the older women, a large proportion of whom were married, were doubly handicapped by their age and their home duties, when they were employed in the heavy factory work, such as the making of projectiles and shells. In the lighter work, however, such as the making of fuses, cartridges and explosive supplies, these handicaps had little adverse effect on the health of the workers. The difficulty seemed to lie not in the general strain of factory life, but in the moderate degree of actual physical labor required, which taxed the health of the older women far more severely than that of the younger. With a view to prevent wastage in labor and to promote greater efficiency, the author suggests a preliminary medical examination for all women munitions laborers, as well as a redistribution of feminine labor between the two types of factories, so that each woman will have a chance to do the kind of work best suited to her strength.

Military Medicine and Surgery

A STUDY OF DIPHTHERIA CARRIERS IN A MILITARY CAMP

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Writers on military hygiene have affirmed that diphtheria has never been of serious importance in the Army, for the reason that it is easily controlled. This opinion is not shared by the officers on duty at the Base Hospital, Camp Doniphan, since their experience has demonstrated that, under certain circumstances, an epidemic of the disease is exceedingly difficult to overcome.

During the early months of 1918 the control of diphtheria, with especial reference to the carriers of the disease, was a very serious problem, which for a long time seemed but little influenced by the strenuous efforts of the staff.

As shown in Chart 1, a few cases were constantly present from October, 1917, but it was not until the latter part of January, 1918, that the disease began to show a marked upward tendency. From that time it persisted, despite the most earnest efforts and carefully devised safeguards, for nearly four months.

During the period cited, 461 cases and 686 carriers of diphtheria were observed. In their study, nearly 30,000 cultures were made and examined.

By the greatest of good fortune, the degree of virulence of the responsible organism was slight. Only three deaths occurred, all as the result of myocardial degeneration, and the individuals concerned were already enfeebled as a result of antecedent disease.

The condition, however, was serious militarily, since it compelled the withdrawal, from organizations engaged in intensive training for war, of more than a thousand men. These were separated from their commands for long periods, since the vital question was not how quickly a person might be returned to duty, but how long before it would be safe for his organization to receive him.

The infection was exceedingly tenacious. The means employed for the control of the epidemic, though in many respects more vigorous than those suggested by authorities on the subject, for a long time barely sufficed to maintain an equality between outgoing and incoming cases.

The intramural situation gave most concern. At a time when but few cases were under treatment, it was discovered that more than half of the twenty-six wards contained carriers, among patients and attendants. Though cultures were made of all in such wards, and infected individuals removed, the next search, at an interval of from five to seven days, was sure to reveal at least as many more who harbored the organism.

The epidemic was finally overcome only when available susceptibles had been segregated, or, in the course of military events, had been transferred elsewhere.

STATISTICAL BASIS OF THIS SURVEY

No attempt is made in this paper to discuss the treatment of clinical diphtheria, its complications or results, as that subject has been thoroughly treated by others. We are chiefly interested in the discussion of the diagnosis, treatment, results and control of the carrier condition and the epidemiology of the outbreak in this camp.

The data for this paper were derived from (*a*) the study of 686 diphtheria carriers and 461 cases of clinical diphtheria; (*b*) the incidence of *B. diphtheriae* in patients admitted to the head surgery section; (*c*) the results of operative treatment in 294 diphtheria carriers; and (*d*) laboratory investigations.

CLASSIFICATION OF CARRIERS

Carriers may be thus classified:

1. Primary carriers: A, transient; B, chronic.
2. Secondary carriers.

A primary carrier is one who has never had clinical diphtheria. In transient carriers the bacilli do not find more than a temporary resting place, the reason being that the nasal passages are normal and the tonsils are quite healthy or have been enucleated. The chronic carrier is one in whom positive cultures are obtained for an indefinite period of time. In some of these individuals the carrier condition is intermittent. Following a series of negative cultures, positive cultures recur at irregular intervals. Reinfection, overgrowth by other bacteria and the fact that the organisms are deep in the crypts and have not manifested themselves on the surface at that examination may be suggested as possible reasons.

The secondary carrier is one who, having recovered from clinical diphtheria, still continues to harbor the germs of the disease.

TABLE 1.—NUMBER OF CULTURES EXAMINED

Year	Month	Positive		Negative	
		No.	Per Cent.	No.	Per Cent.
1917	October	10	52.6	9	47.4
	November	90	22,9	302	77.1
	December	138	7.6	1,684	92.4
1918	January	350	9.2	3,462	90.8
	February	895	18.9	3,855	81.1
	March	1,236	15.3	6,849	84.7
	April	1,451	25.1	4,330	74.9
	May	456	8.9	4,702	91.1
Total		4,626	15.5	25,193	84.5

THE VALUE OF CULTURES

The carrier condition can be determined only by means of cultures. A single negative culture has but little value, as is proved by these figures: Of 294 cases in which tonsillectomy was performed for the relief of the carrier state, cultures taken from the tonsils immediately preceding the operation yielded positive results in 57 per cent. of the cases, and negative results in 43 per cent. Cultures of the tonsils after removal gave positive results in 77.2 per cent of the cases. The fact that negative cultures were obtained in 22.8 per cent. of individuals in whom the carrier condition had been definitely proved emphasizes the necessity for caution in overestimating the value of a single negative culture. In a number of instances a pure culture of *B. diphtheriae* was obtained from tonsils removed from patients who had not been identified as carriers. But these patients had had the disease from four to fourteen weeks previous to admission and had been released on the required number of negative cultures. As is well known, negative cultures may be obtained at times from cases that run the course of typical clinical diphtheria.

The value of nasal cultures is not fully appreciated. That a nasal culture is of great importance is well illustrated by the case of a carrier who was under observation for a period of four and one-half months. Cultures from the nose were much more consistently positive than those obtained from the throat. Tests made on several occasions showed that the organism present in the nose was distinctly virulent for guinea-pigs.

These figures illustrate the returns that may be expected in all types of nasal and pharyngeal carriers. Of 700 cultures from the nose and throat, positive returns from the nose were obtained in 26 per cent. of the cases, while those from the throat were positive in 31.7 per cent.

SYSTEM EMPLOYED IN MAKING CULTURES

On the appearance of a clinical case of diphtheria or of a carrier, the regimental surgeon was requested to have all contacts appear at the regimental infirmary at an hour most convenient to the company commander, usually at 1 o'clock or immediately before a formation. When a second or a third case appeared in the same company, cultures were taken from all members of the organization in order to ascertain if carriers were present.

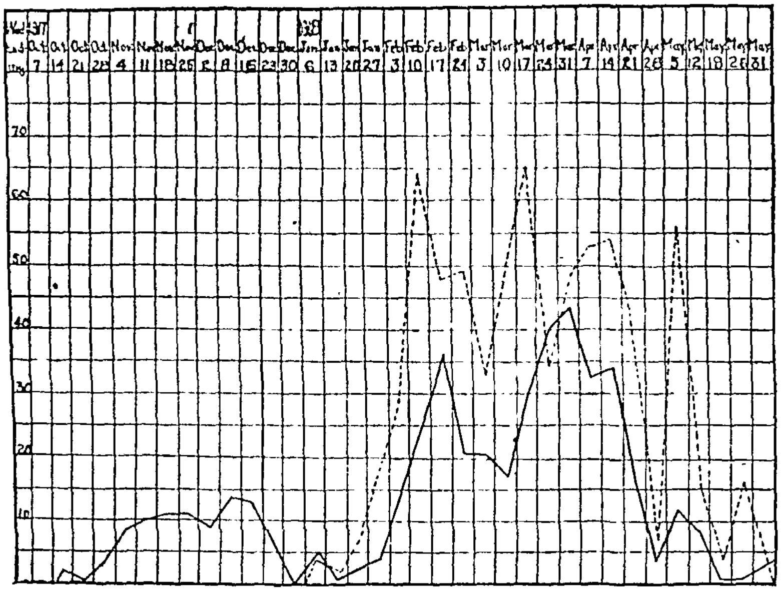

Chart 1.—Weekly occurrence of diphtheria and diphtheria carriers at Camp Doniphan: solid line, cases; broken line, carriers.

The cultures were taken from the nose and throat and planted on Loeffler's medium, one tube being used for both swabs. Tubes were then collected and returned to the laboratory for incubation and examination. Tubes of the medium, together with sterile swabs, were distributed weekly to each regimental infirmary in order that cultures could be promptly taken in all cases of sore throat. The inoculated tubes were then delivered to the laboratory by the ambulances on their regular rounds. After incubation for from eighteen to twenty-four hours, cultures were smeared and stained with Loeffler's methylene blue.

BACTERIOLOGIC DIAGNOSIS

To aid in establishing uniformity in diagnosis, we adopted Wesbrook's classification of *B. diphtheriae*. Those organisms showing the morphology of Wesbrook's Types A, A^1, B, B^1, C and D were considered as being positive. Those that did not show all the characteristics of these types were further incubated for from four to six hours in order to ascertain if they would assume those characteristics.

In the course of this study it was noted that diphtheroids were found more frequently when cultures made from the nose and throat were planted on the same tube. In all doubtful cases, when no definite decision could be made, cultures of the nose and throat were inoculated on separate tubes. In these cases it was frequently found that the throat cultures were negative while the nasal ones showed the presence of suspicious organisms.

No attempt was made to carry out virulence tests as a routine measure, since the large number of cases made it impracticable. In cases of doubtful morphology, and in those cases running a persistent positive course, virulence tests were carried out. Twelve cultures obtained from the nose, eleven from rib resection wounds, and nine from the throat were tested for virulence. Of this group of thirty-two cases, eleven cultures from the nose, two from the rib resection wounds, and nine from the throat were virulent for guinea-pigs. In order to conserve animals, the method advocated by Zingher and Soletsky[1] was used. The culture was isolated, transferred to tubes of Loeffler's blood serum, and, after from eighteen to twenty-four hours' incubation, the slant was washed off with sterile salt solution until a uniform dense emulsion was obtained. Of this emulsion from 0.1 to 0.2 c.c. was injected intracutaneously into a guinea-pig. At the end of from twenty-four to forty-eight hours an area of redness and induration developed at the site of inoculation which, in most instances, went on to necrosis in those animals showing positive reactions.

LOCALIZATION OF ORGANISMS

Every carrier was given a thorough examination in order to localize the affected area. After thorough cleansing of the mucosa, several cultures were made from the superior and inferior regions of each nostril and from each tonsil.

A positive culture from the throat does not necessarily imply that the carrier condition is located in this region, as the bacilli may be carried from the nose or nasopharynx by the inspired air or by the secretions. On the other hand, the bacilli may be carried from the throat to the nose by the expired air or the act of sneezing, and from the resulting positive nasal culture one might infer that the nasal passages were involved. No faith should be placed in a single negative culture, especially in those who have previously shown a positive culture. Conversely, the finding of a single positive culture is not sufficient evidence to justify the diagnosis of carrier, as this may be the prelude to an attack of clinical diphtheria that has not yet had time to manifest itself.

FOCI OF INFECTION

Tonsils.—The presence of a favorable soil for bacterial growth is a factor that determines the persistence of the carrier condition. If necrosis or ulceration of the epithelium covering the tonsils or lining the crypts is present, the bacilli may be found in the tissue beneath the diseased area. The size of the tonsil, per se, is not a factor as a predisposing cause in establishing the carrier condition. The degree to which the tonsil is covered, the extent of surface exposed, lobulation, and the presence of folds or crevices, all have a definite influence on infection of the tonsils by interfering with the evacuation of the crypts. In this study it has been demonstrated repeatedly that acute or chronic pus infections are often associated with diphtheria carrier conditions.

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[1] Zingher and Soletsky: Jour. Infect. Dis., 1915, **17**, 456.

In order to ascertain the points of localization of *B. diphtheriae* in the tissues, cultures were made from the nose and throat immediately preceding tonsillectomy, and planted on separate tubes of Loeffler's medium. The excised tonsils were received in sterile Petri dishes and delivered to the laboratory. After removal of the surface blood and bacteria by means of sterile salt solution, a sterile swab was inserted deeply in the crypts and then inoculated on Loeffler's medium. From the tonsils found to be infected, almost pure cultures of *B. diphtheriae* were obtained in the vast majority of cases. In most instances the organisms displayed the morphology of Types C and D of Wesbrook's classification. About ten or twelve showed his Types B and B^1, while in five or six cases Type A was found.

In two cases studied, Lieutenant Thorne, M.C., demonstrated the presence of *B. diphtheriae* in the submucosa of a tonsil from the surface of which a pure culture had been previously obtained, thus confirming the work of others.

Nose.—The next location, in order of importance and frequency, is the nose. Acute or chronic infection of the accessory sinuses, ulceration or erosion of the septum or soft tissues, and the presence of dry secretions and gross abnormalities interfering with ventilation and drainage all furnish favorable conditions for the lodgment of the bacilli. In the chronic accessory sinus affections, especially those associated with marked atrophic changes, the prognosis is almost hopeless. It was impossible to discover any particular location within the nose that favored the growth of the bacteria. Washings from the sinuses invariably proved negative. The idea that the mucous glands were the definite points where the bacilli thrived was not substantiated. Tissues removed from the various regions of the nasal passages were sectioned and stained for the organism with results that were entirely negative. In spite of several failures to demonstrate the presence of the organisms, their general distribution throughout the nasal passages justifies the belief that, sooner or later, they will be found underneath the diseased mucous membrane and possibly in the ethmoid cells.

Nasopharynx.—The nasopharynx ranks third in order of frequency as a lodging place for *B. diphtheriae.*

This may be attributed to the presence of ulcerative or inflammatory processes, infections of the posterior ethmoid and sphenoid sinuses, and the presence of hypertrophied adenoid tissue. The size of the latter is not of etiologic significance, as a relatively small amount may harbor the bacilli as effectively as a large mass. The same difficulty has been met in finding the organism in the adenoid tissue that was encountered in the case of the nose.

Wounds.—Wounds may carry the bacilli for an extended period of time. An epidemic of wound diphtheria occurred in two wards occupied by patients who had rib resections for empyema. In one of these wards the diphtheria bacillus was first demonstrated in the wound of a head carrier; this occurred about the middle of March. Five more cases had developed by the end of the month, and twenty-eight occurred in April and ten in May, making a total of forty-four cases. In thirty-three of these cases, *B. diphtheriae* was found in the wound alone, while in twelve the organism occurred in both wound and throat. In thirteen cases the presence of a pseudomembrane and other characteristics of a diphtheric wound were noted. With few exceptions the organism was recovered from granulation tissue, while cultures taken from the depth of the wound were usually negative.

The virulence of the organism was proved by intracutaneous injections into guinea-pigs. In one of two cases thus studied, redness and induration at the site of inoculation was produced after twenty-four hours, and at the end of seventy-two hours local necrosis was well marked. The second pig died within seventy-two hours after an intracutaneous injection of 0.2 c.c. of an emulsion of the culture. At the postmortem examination typical lesions of diphtheria were found.

In several instances the organism was recovered from the skin which had covered over the opening into the chest.

Ears.—In a few cases the bacilli were found in the discharge from acute and chronic suppurative processes of the middle ear.

NONOPERATIVE TREATMENT OF THE CARRIER CONDITION

For the cure of the carrier condition many medicinal agents have been advised, such as sprays, applications, gargles, douches and inhalations. Other agents, acting in a purely mechanical manner (such as kaolin), have been proposed. At various times antitoxins, diphtheria vaccine, antibacillary serum, toxins of *B. pyocyaneus,* and cultures of various living bacteria have been recommended and reported on favorably. From experience derived previous to and during this epidemic, we feel that the value of any local treatment is particularly liable to be ineffective because of the fact that the bacilli are found in the depth of the crypts and beneath the epithelium and are, therefore, untouched by the remedial agent.

In nasal carriers the cessation of the carrier state takes place on the disappearance of the accompanying pathologic condition; therefore, efforts must be directed toward the improvement of the underlying condition.

In the most persistent carriers, local measures were without avail. Various kinds of solutions for irrigation, silver salts, dichloramin-T, crystal violet, and oily sprays were given a thorough trial. It was not difficult to obtain negative cultures while the treatment was being carried out, but when this treatment was discontinued the cultures were again returned positive, and, unless the patients were kept under careful control, it was quite easy to draw inaccurate conclusions regarding the effect of local measures. The harm, of course, results in the release of carriers who are still a menace to their comrades. It must not be construed from what has been written that the affected regions, especially the nose, should not be kept clean, since this is one of the prerequisites for the restoration of the normal functions of the diseased area. At the same time the use of strong irrigating solutions should be carefully governed, for, if used in too great strength, the mucous membrane will be injured to a further degree.

When a wound is involved, it should be dressed frequently in order to keep it as clean and dry as possible, and all granulations should be removed.

OPERATIVE TREATMENT OF THE CARRIER CONDITION

Since local applications have proved unreliable in the treatment of the carrier state, it seems to us that operative interference is the only solution of the problem, especially in those cases in which the tonsils can definitely be shown to be the focus of infection. In 77.2 per cent. of carriers, the bacilli were harbored in the tonsils. The majority of the remainder showed the presence of *B. diphtheriae* in the nose.

The tonsils should be removed in every case in which it can be positively demonstrated that they are harboring the organism. The contraindications for tonsillectomy in carriers are those that apply under other circumstances.

The majority of patients with clinical diphtheria remain in the hospital for a period of approximately four weeks before they are returned to their commands. Since, in the average case, the bacilli have disappeared by the end of the third week, this may be taken arbitrarily as the beginning of the carrier stage. Consequently, it is safe to remove the tonsils at this time, provided there are no contraindications.

The reaction in carriers, following operation, does not differ from that found in noncarriers. Occasionally it may be severe enough to arouse suspicion that clinical diphtheria is present. However, unless there has been operative traumatism to the surrounding structures, the limitation of the postoperative exudate to the tonsillar fossae—in contrast to the angry red, edematous throat of diphtheria, in association with the marked prostration—suffices to differentiate the two conditions.

Patients on whom operations were performed had been positive for a period varying from one week to several months. As nearly as could be determined, the proportion of primary to secondary carriers was as 2:1. Of the 294 carriers operated on, 20 per cent. yielded a positive culture from the nose and 57 per cent. from the throat, immediately before operation. Subsequent to operation the following results were obtained:

Ninety-four, or 32 per cent., had no positive returns.

One hundred and thirty-six, or 46.4 per cent., were negative by the end of the first week.

Thirty-eight, or 12.9 per cent., were negative by the end of the second week.

Eleven, or 3.7 per cent., were negative by the end of the third week.

Fourteen, or 4.7 per cent., were negative by the end of from four to eight weeks.

One, or 0.3 per cent., was still positive at the end of four months despite all treatment.

In those cases found to be persistently positive, acute or chronic infections of one or more of the accessory sinuses, septal deformities with erosions, or infected adenoid tissues were present.

The time of clearing, as shown by the 91.3 per cent. who were negative by the end of the second week, corresponds very closely to the time required for healing. As the postoperative exudate disappears and the wound heals and becomes smooth, the lodging places of the bacilli become obliterated. In one carrier with adenoid involvement the bacilli disappeared after the tissue was removed. In the persistent nasal carriers, clearance coincided with improvement in local conditions. On the cessation of the infection in the acute sinus cases, the carrier condition terminated.

In the chronic cases, drainage and constant attention to cleanliness helped, but only after a considerable time. Patients with atrophic rhinitis presented the greatest difficulty as, even after the most continued and careful treatment, and the return of more than the required number of negatives, there was no assurance that the bacilli had finally disappeared. The advisability of operating on these patients was considered, but the extensive involvement of the nose and accessory sinuses, with the resulting marked disturbances of function and nutrition, all advised against this. In addition, there was no assurance that crusts would not continue to form and thus serve to maintain the original condition. The question naturally arises as to what should be done with this class of patients. Chronic infection of the accessory sinuses disqualifies for admission into the service. Nevertheless, there are many such cases in the Army at present. It may not be practicable to have the opinion of a specialist on each individual in the service, but, in our opinion, every one connected with a base hospital should have a thorough examination of the nose and throat. Remediable conditions should have early attention. Chronic nasal diseases that offer no hope of early improvement or cure may necessitate discharge from the Army.

The disposition of a chronic nasal carrier with virulent bacilli is a question that will require much consideration. It may be solved partly by employing these patients in diphtheria wards where there are cases of diphtheria in the hospital or camp. What should be done with them at other times is the point to be decided. At present the isolation camp is the only solution. It is impossible to state the length of time during which the carrier condition may persist. To illustrate, one case that occurred in civil practice may be cited. An infant became a carrier at the age of 2 months. The bacilli

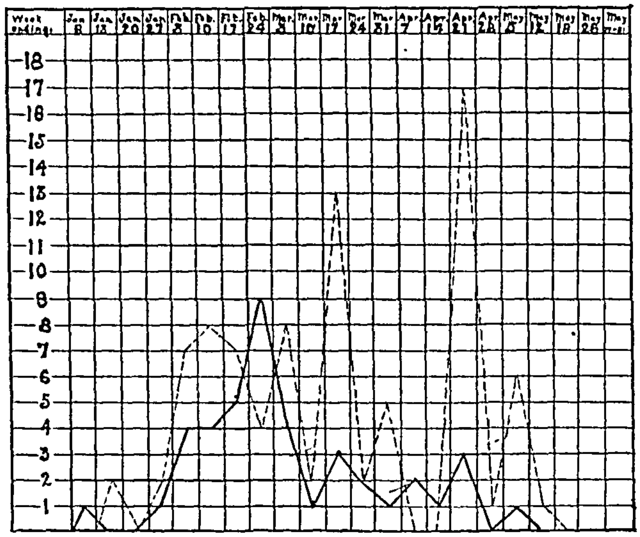

Chart 2.—Occurrence of diphtheria among the base hospital personnel: solid line, cases; broken line, carriers.

continued to be found for 251 days. Virulence tests made shortly before the condition cleared were positive.

CONTRIBUTORY FACTORS IN THE MAINTENANCE AND SPREAD OF THE EPIDEMIC

Measures undertaken for the control of any communicable disease must begin at the source of infection and continue until all danger of infecting others has passed. The following factors may counteract any or all of the defensive measures that have been instituted against an epidemic:

A. Delayed or mistaken diagnosis. This may be seen especially in cases of primary laryngeal diphtheria, which may remain undiagnosed for several days.

B. Ambulatory cases, usually of a mild or nasopharyngeal type. This was illustrated by a case in which a man was admitted to the hospital with the history of an indefinite nasal complaint of nineteen days' duration. A diagnosis of nasal diphtheria was made, which was confirmed by the laboratory. Yet, during the entire period of his illness, the patient had been doing full duty with his regiment.

C. Contiguity. The spread of disease by droplet infection is facilitated by close association in tents, barracks, wards, wash rooms, kitchens and general mess halls.

D. Fomites. Dishes, kitchen utensils, the use of the pipe, drinking cup, canteen, or musical instruments in common, mouth pieces of gas masks, unwashed bed linen, and laundry must all be taken into consideration as distributing agents in an epidemic.

E. Food supply. The milk supply should be investigated, especially when raw milk is being used.

F. Lack of appreciation of the seriousness of the carrier problem on the part of some of the members of the hospital organization, comparatively few of whom have previously had any experience with contagious diseases.

G. Improper methods of taking cultures. Cultures should be taken carefully and not by the "hit or miss" method so often employed. The most reliable results are obtained when cultures are taken from the tonsillar crypts and from the nose. Wound cultures should be made from the granulation tissue before the wound is dressed. Cultures from the nose and throat should be taken immediately before treatment.

H. False conclusions from defective material. Old or contaminated culture mediums may inhibit the growth of the diphtheria bacilli. The use for the Schick test of toxin which has deteriorated in potency may lead to erroneous conclusions as to the presence, in the body fluids, of sufficient antitoxin to protect the individual.

I. Release of patients from quarantine before negative cultures in sufficient number have been obtained, or before the necessary interval of time has elapsed.

J. Disregard of surgical principles in dressing wounds. Particular care should be taken that all gloves and instruments should be thoroughly sterilized for each case.

K. Lack of appreciation of the importance of carrying out quarantine regulations. The fact that the patient is needed by his organization or that there is a shortage of beds in the hospital should not be a sufficient cause for the premature release of a man from quarantine.

L. Undetected carriers. Individuals who have not been found positive by the laboratory, and patients with acute tonsillitis may be discovered to be carriers only when cultures are taken as a routine measure.

The causes for the maintenance or spread of an epidemic of diphtheria may be classified as avoidable and unavoidable. Inexperience, indifference, ignorance and carelessness are factors in the first group. Under unavoidable causes may be included legitimate errors in the diagnosis of atypical cases of diphtheria, clinically mild cases, carriers released after full compliance with the regulations, and, lastly, inadequate laboratory facilities.

CONTROL AND PREVENTION

The methods provided for the control of communicable diseases are so well known that a review would seem unnecessary. When the cases are few, the proposition may be simple; but when there are many to be dealt with and it is essential that company organization and the training of troops shall be maintained, the problem becomes more complex.

A. Centralization of control. For the attainment of efficiency and the accomplishment of results, centralized control is absolutely necessary, as division of responsibility tends toward weakness.

Clinical diphtheria is under the care of the hospital section of medicine. Suspect cases usually appear in the wards pertaining to head surgery. Nose and throat carriers may be found anywhere and are inherited by the latter service. Military or hospital exigencies may require frequent changes in attendants. Patients convalescent from diphtheria must be removed to make room for the acutely ill, and may be transferred to a convalescent camp. Since this may become overcrowded, the patients must in turn be moved to an isolation or quarantine camp. In the meantime, as a result of the conditions cited, cultures may have been overlooked or neglected.

In view of the fact that, in this series of cases, the laboratory passed on all cultures submitted and was therefore cognizant of the status, from a bacteriologic standpoint, of all cases of diphtheria, the following system was adopted for the control of the epidemic: Whenever a new positive culture was found, a record was made of the name, rank, organization, date of primary culture, and whether the patient was a case or carrier. The results of all subsequent cultures were added to this record. After three negative cultures had been obtained at three-day intervals, the chief of service was notified that the patient could be released from quarantine. In cases in which the positive returns persisted for a period of three weeks or longer, the matter was brought to the attention of the chief of the nose and throat service for further investigation.

B. Disposal of patients. Undoubted clinical cases of diphtheria were sent directly to the diphtheria wards by the receiving officer. All patients who were sent to the head surgery section were examined in the outpatient room before being admitted to the wards. Owing to the large number of acute inflammatory throat conditions admitted at this season, it was considered advisable to make cultures of every patient admitted to this service. Suspicious cases were isolated in private rooms. Separate wards were set aside for the reception of carriers. Known carriers from the camp or other wards were received there directly.

On account of the necessity of awaiting the laboratory report on cultures, the disposal of patients presented a problem. To meet this contingency, the following plan was evolved in conference with the commanding officer, the chief of the section of head surgery, and the chief of the laboratory: Five pyramidal tents, each having a capacity of four beds, were erected in the rear of the head surgery wards. All patients admitted to the service other than by transfer from other wards were examined, cultures were taken, and the patients were treated and then sent to the observation tents. On the return of the culture findings, patients with negative cultures were transferred to the clean wards, while those with positive cultures were sent to the carrier or diphtheria wards, according to the laboratory findings. Since the information furnished from the return of a single negative culture was found to be insufficient, the patients who had been sent to the clean wards were isolated in cubicles and further cultures were taken. If found negative on the second culture, they were allowed the freedom of the wards, but if found positive they were transferred to a carrier ward. All patients presenting symptoms suggestive of clinical diphtheria, even though the cultures were negative, were kept isolated in the observation tents or, if quite ill, in private rooms in wards until a definite diagnosis was made.

From the middle of February to the latter part of May, 680 patients were sent from the receiving office to the head surgery section for all causes. Of this number 127 were found to be either diphtheria carriers or cases: of these, fourteen patients were sent at once to the diphtheria wards; sixty-one patients were sent from the observation tents to the diphtheria wards at a varying number of hours after admission; thirty-two patients were sent to the carrier wards. Twenty patients who were negative on the first culture and who had been isolated in clean wards gave positive returns on the second culture. The extent of the epidemic may be readily appreciated when it is noted that 18.6 per cent. of all cases that passed through the head surgery section were either carriers or cases of diphtheria.

Routine cultures were taken, at five to seven day intervals, of the personnel and patients. The system of cubicle isolation and the establishment of carrier wards was soon extended to the other wards of the hospital.

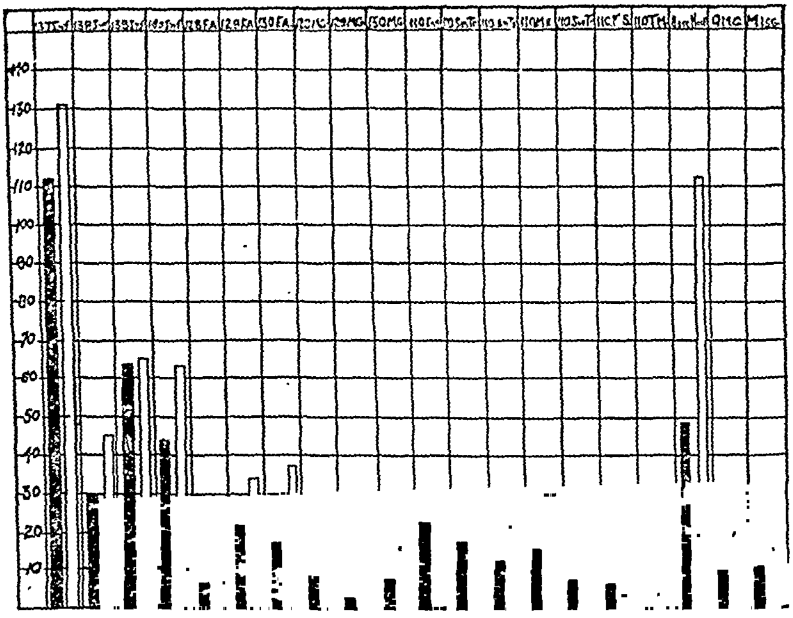

Chart 3.—Incidence by organizations of diphtheria and diphtheria carriers at Camp Doniphan, Oct. 1, 1917-June 1, 1918: solid blocks, cases; outline, carriers.

C. Masks. The protection afforded by masks may be real or imaginary. The simple gauze bandage is the poorest of all, since when worn by patients it may be found in any position between the chin and the forehead. The mouth and nose are rarely covered at the same time. The combined head and face (helmet) mask, if made of a material with a close mesh, is the most efficient and may be worn for some time with comparatively little discomfort. The thick gauze surgical mask which fits the mouth and nose closely is uncomfortable for continuous wear and, owing to the condensation of moisture on it, becomes unsightly. A mask that was found suitable for clinic work and ward visits was made of a copper wire frame covered with several layers of gauze held in place by small strips of adhesive plaster or by basting thread. It was similar in appearance to an anesthetic mask. The frame was bent to fit the nose and mouth closely. Tapes or paper clips that held a rubber band were attached to the sides of the mask, and by the slipping of these bands over the ears the mask was securely held in place. Its chief advantages consisted in the rapidity with which it could be adjusted or removed, and the absence of the discomfort that is found with all close-fitting masks. Conversation was not interfered with, which was also advantageous when clinical instruction was being given.

Despite regulations regarding the wearing of masks, it is very difficult to obtain complete observance with ambulatory patients and even with attendants. Sharp disciplinary measures are necessary to enforce compliance with the rules.

D. The Schick test. There is very little doubt that the Schick reaction, by determining the susceptibility of individuals to diphtheria, is of great value as an aid in controlling the spread of the disease. Of 1,035 Schick tests performed, eighty-eight (8.5 per cent.) were positive, while 947 (91.5 per cent.) were negative. Of the eighty-eight persons who yielded a positive reaction, fifteen developed diphtheria, while among those who showed a negative reaction only three contracted the disease. All carriers tested gave a negative Schick.

Faulty results will be obtained if the toxin used is not of the proper potency. This was demonstrated in the case of the three men who developed diphtheria after a negative Schick, for, on further investigation, it was found that this particular lot of toxin had deteriorated.

E. Toxin-antitoxin. That diphtheria antitoxin confers but a transient immunity is well known. This fact is further corroborated by our own observation of a group of men, a number of whom manifested a positive Schick reaction within from three to four weeks after the administration of immunizing doses of antitoxin.

Within the past four months fifty-eight Schick-positive individuals have been injected with three doses of a toxin-antitoxin mixture prepared by the New York Board of Health. As these men have been transferred from this station we have been unable to carry out further tests in order to ascertain whether or not they have developed an active immunity.

We appreciate the fact that the injection of toxin-antitoxin will not give rise to immunity until after three or four months and is, therefore, of but little value in an epidemic. We are aware, moreover, that the administration of immunizing doses of antitoxin to susceptible individuals during the epidemic, though they protect the patients for the time being, may, on the other hand, so sensitize them as to make further introduction of serum dangerous, since it may give rise to anaphylactic shock. Nevertheless, these measures are of decided value and should be employed.

F. Hospital rules for the control of the epidemic. To supplement or amplify the rules concerning communicable diseases as prescribed by the Office of the Surgeon-General, the following additional rules were promulgated as occasion demanded

1. Cultures will be taken from the nose and throat of all patients, ward attendants, and detachment personnel other than those employed in the wards, every seven days.

2. The receiving officer or officer of the day will have cultures taken from the nose and throat of all patients admitted to the hospital and will note that fact on the admission slip. If patients are too ill to have cultures taken in the receiving ward, cultures will be promptly taken by the ward officer.

3. It is directed that cultures from new cases entering the hospital be designated by writing across the request blank, "Field case," "For diagnosis," "Carrier" or "Release," as the case may be.

4. Masks will be worn by all members of the staff in all wards and by the patients in the diphtheria and carrier wards. The nose must be kept covered as well as the mouth.

5. Except in emergency, new personnel must show a negative culture and a negative Schick test before assignment to ward duty.

6. Nurses who are infected (patients and carriers) will be isolated in separate wards. Carriers will remain on duty but will be assigned to diphtheria wards only.

7. No contact will be permitted between patients from different wards. To insure this at meal times, all patients will be messed in their wards and no meals will be served in the mess hall.

8. Articles used in serving food (dishes, knives, forks, etc.) will be cleansed in the wards and then sent to the kitchen to be sterilized by boiling.

9. Visiting in carrier wards is forbidden.

10. Symptoms of sore throat in any member of the hospital organization will be immediately reported to the next higher authority. Cultures will be made at once and the individual isolated until the result is known.

11. Patients in clean wards who are found to be positive are to be transferred to carrier wards at once, and cultures are to be made of patients remaining in the clean wards.

12. Cultures of carriers are to be made daily until a negative is secured. Thereafter they are to be made every third day.

13. New patients in clean wards are to be isolated in cubicles and will not be allowed the freedom of the ward or latrine. A culture will be taken on the day of admission and on the following day.

14. Cases and carriers will not be released until notification of release from quarantine is received from the laboratory.

15. Cultures will be taken of patients received in the ward, by transfer from another ward, and these patients will be isolated until the results of the cultures are reported from the laboratory, unless cultures have been taken within three days prior to transfer.

16. All medical officers, nurses and enlisted attendants are to have a Schick test, and when this is found positive, toxin-antitoxin is to be administered for the purpose of immunization.

17. After discharge from the hospital, carriers and patients are to report once a week for culture of nose and throat for such a time as is deemed advisable.

EPIDEMIOLOGIC STUDY OF DIPHTHERIA

Chronologic Occurrence of Diphtheria.—That diphtheria is a disease of winter is well shown in Chart 1, since its incidence is much higher during the coldest months. Unfortunately, no differentiation was made between the cultures obtained from clinical cases and from carriers prior to January, 1918, but after that date all cultures submitted to the laboratory were designated as from clinical cases or otherwise. Almost perfect parallelism is seen to exist in this chart between the number of carriers and clinical cases. The great increase in the number of carriers over cases for the week ending May 5 was especially notable in the three organizations in which the greatest number of clinical cases for that week developed.

Occurrence of Diphtheria Among Hospital Personnel.—Examination of Chart 2, showing the occurrence of diphtheria and carriers among the hospital personnel, does not reveal the close parallelism that is seen to exist in Chart 1, since the number of carriers greatly exceeds the number of cases, except during the onset of the hospital epidemic, which occurred during the month of February. This is explained by the fact that the hospital attendants who were susceptible to diphtheria contracted the disease during the early part of the epidemic while, later, the constant exposure of those who were immune increased the proportion of carriers. It is of interest to note that a decided increase in the number of cases of diphtheria in the camp is followed, within a few days, by a similar increase in the number of cases among the hospital personnel. This may be noted by contrasting Charts 1 and 2 for the weeks ending February 17 and 24, March 31, and April 7, 14 and 21. This may naturally be attributed to the fact that the members of the base hospital received their infection from the patients admitted from the camp, and, since a period of incubation must elapse from the time of exposure to the time of the manifestation of the disease, the apex of the curve in Chart 2 would necessarily lag behind that of Chart 1.

Another source of infection, aside from the camp cases, was found within the hospital itself. On examination, the fact was revealed that approximately twenty carriers and patients were working in the detachment and hospital messes as cooks or cooks' police. Since the ambulatory patients from all clean wards congregated here for their meals, they were naturally subject to exposure to diphtheria. Corroborative evidence that this was a source of infection was adduced by the fact that the highest incidence of carriers and cases occurred in Hospital Barracks A and B, where most of the kitchen force was quartered.

Occurrence by Organizations.—On examination of Table 2 we find that organizations coming from rural communities have distinctly higher incidences of diphtheria than those coming from the cities. Thus a comparison of the four regiments of infantry, all having approximately the same strength and living under the same conditions, reveals the fact that the 137th and 139th infantries, coming from rural communities, have a higher percentage of cases and carriers than the 138th and 140th, coming from St. Louis and Kansas City, respectively. The same distinct difference may be seen to exist among the regiments of artillery, which were of like strength and lived adjacent to each other under similar conditions.

An apparent discrepancy in this statement may be found in the percentage of carriers and cases occurring among the base hospital personnel, which had a strength of approximately 500. This fact may be attributed, as has been mentioned in the discussion of Charts 1 and 2, to their continual exposure to the disease.

It is of more than passing interest to note that, in the study of empyema made during the past winter, those organizations that exhibited a high morbidity for empyema showed, in this survey, a high incidence of diphtheria. From these facts one must conclude that, as has already been shown by others, a man from a rural community is not as great an asset to his organization in the early part of his military career as is an urban individual.

CONCLUSIONS

1. A single negative culture is only of relative value, as is shown by the fact that preoperative cultures, taken from tonsils that later proved positive for diphtheria, were negative in 22.8 per cent. of the cases.
2. The importance of nasal cultures is shown by the fact that in routine cultures taken from carriers, 26 per cent. were positive from the nose.
3. Cultures from chronic carriers should be tested for virulence.
4. The carrier state is maintained by some underlying pathologic condition of the affected tissues.
5. In the great majority of cases the carriers harbor the bacilli in the tonsils; a few carry the germs in the nose only; a small group maintains the infection in both nose and tonsils.
6. Conclusions based on the results of local treatment should be founded on careful and prolonged bacteriologic study. Cultures should be taken immediately before treatment, or, if local treatment is being administered, this should be suspended for a number of days before cultures are taken. The results of local treatment are problematical, since the organisms are situated deeply in the tissues.
7. In persistent carriers in whom the focus of infection is the tonsil, enucleation offers the only certain procedure for terminating the carrier state.
8. The most persistent nasal carriers are those in whom chronic inflammatory or atrophic processes are found. It is almost impossible, in view of the varying culture returns, to state when the condition has finally cleared.
9. Centralization of authority is necessary for the control of an epidemic of diphtheria and diphtheria carriers in camp. Release of patients from quarantine should be under the supervision of the laboratory.
10. During an epidemic, patients should not be admitted to a clean ward unless they have had at least two successive negative cultures from the nose and throat.
11. Improperly constructed and improperly worn masks give a sense of false security.
12. The hospital personnel should be given a Schick test, and those giving a positive reaction should be immunized with toxin-antitoxin mixture.
13. Toxin for the Schick test should be prepared fresh, and no diluted toxin should be used after twenty-four hours. The undiluted toxin should be kept in the dark and in a refrigerator.
14. Intermittent chronic carriers should be employed as attendants in diphtheria wards or in quarantine camps. They should be separated from the hospital personnel and from their organizations.
15. Diphtheria patients may be discharged from the hospital after they have had at least three negative cultures at three-day intervals. Chronic carriers should not be discharged until cultures taken over a long period of time prove consistently negative.

TABLE 2.—OCCURRENCE OF DIPHTHERIA BY ORGANIZATIONS

Organization	Source	Carriers Per Cent.	Cases Per Cent.
137th Infantry	Rural	19.1	24.2
138th Infantry	Urban	6.7	6.6
139th Infantry	Rural	9.7	13.9
140th Infantry	Rural and urban	9.2	9.3
1 [illegible]	[illegible]	1.3	1.8
1 [illegible]	[illegible]	5.1	4.6
1 [illegible]	[illegible]	5.3	3.9
1 [illegible]	[illegible]	2.7	1.8
1 [illegible]	[illegible]	1.3	0.4
130th Machine Gun Battalion	Rural	2.3	1.7
110th Engineers	Rural and urban	3.0	4.9
110th Sanitary Train	Rural	3.0	3.6
110th Ammunition Train	Rural and urban	3.0	2.8
110th Military Police	Rural	4.3	3.2
110th Supply Train	Urban	1.0	1.1
110th Field Signal Battalion	Rural	0.4	1.3
110th Trench Mortar Battalion	Rural	0.4	0.0
Base Hospital	Rural and urban	16.7	10.6
Quartermaster	Rural and urban	3.2	2.1
Miscellaneous	Rural and urban	2.3	2.2

We take this opportunity of expressing our appreciation for the cooperation accorded us during this study to the following members of the staff of the base hospital: Major A. C. Magruder, Capts. W. B. Post, E. E. Hopkins, A. W. Cox, H. E. Blanchard, R. Appleberry and A. E. Edgerton, Lieut. F. H. Thorne, Miss Marjorie Bates, Miss Dorothy Loomis, and Pvt., First Class, Stephens Moore.

THE PROTECTIVE QUALITIES OF THE GAUZE FACE MASK

EXPERIMENTAL STUDIES

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The use of the face mask by surgeons and their assistants to protect clean operative fields which they otherwise would spray with their own mouth organisms at every cough or sneeze is an old and well established procedure. The utilization of the face mask to protect the wearer from droplet infection in the presence of those ill with acute infectious diseases is likewise now a well established custom owing in large part to the careful studies at the Durand Hospital in Chicago. Weaver[1] has shown its efficacy when used in this institution in protecting attendants on infectious disease cases both from contracting these diseases and from becoming carriers of them. Capps[2] has published statistics tending to confirm the work of Weaver and has proposed a new adaptation for the face mask, the essential idea being to use this mask to protect patients from cross-infection in the ambulances, and in the admission rooms and wards of the hospital. The clinical results of this adaptation of the face mask were described by Capps[3] recently.

The work described in this paper was carried out for several reasons. The masks used at this hospital have come from several different sources. Masks found in use in the various wards *on the same day* showed extreme variation in the number of layers of gauze. Some were made with only three layers, and were obviously too thin. Others were made with eight layers, and these were quite hard to breathe through; also they were very warm and uncomfortable. The gauze of which the masks were made varied in quality, some being as fine as twenty-eight strands to the warp and twenty-four to the woof per inch. Other specimens showed twenty strands to the warp and fourteen to the woof per inch. The masks varied in size. Some we believed to be too small. A great difference was noted in the same mask before and after being washed. In addition to this variation in the masks, we judged that there was some difference between the protection afforded the uninfected individual by a mask when placed over the mouth and nose of the one infected and when an identical mask was placed over the mouth and nose of the uninfected, for the reason that in the latter situation the mask is at a greater distance from the source of the organisms, and they are not propelled against the mask with the force that they are when it is directly subjected to currents of air expelled from the mouth carrying numerous droplets of mucus and saliva, each one of which probably carries many organisms.

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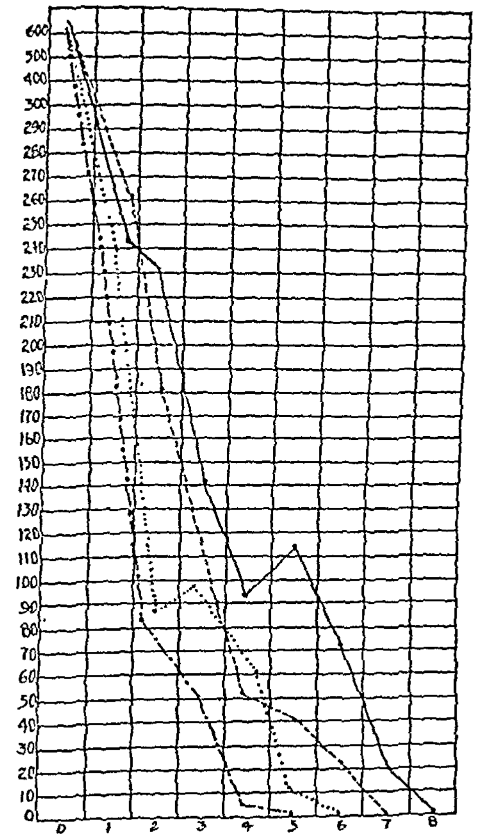
[1] Weaver, G. H.: The Value of the Face Mask and Other Measures, The Journal A. M. A., *Jan. 12, 1918, p. 26.*

[2] Capps, J. A.: A New Adaptation of the Fase Mask in Control of Contagious Diseases, The Journal A. M. A., March 30, 1918, p. 910.

[3] Capps, J. A.: Measures for the Prevention and Control of Respiratory Infections in Military Camps, The Journal A. M. A., Aug. 10, 1918, p. 448.

One of us was found to be a badly infected carrier of typical pneumococci (Type IV) which could be distinguished on human blood agar plates from air-borne organisms of the room which were deposited on plates of the same mediums exposed at the same time in the same room. It was determined to have this individual cough directly at a Petri dish containing this medium, first without a mask and later with masks over the face, each succeeding mask being thicker by one layer than the preceding one. Masks tested varied in thickness from one to eight layers. The gauze used was Bauer and Black's or the equivalent of their specimens called, (1) B and B (32 by 26); (2) L and L (28 by 24); (3) Lakeside (24 by 20); (4) Dearborn (20 by 14).



Experiment with gauze over face: line of dots and dashes, B and B (32 by 26); dotted line, L and L (28 by 24); broken line, Lakeside (24 by 20); solid line, Dearborn (20 by 14).

The coughing was kept as nearly constant as possible, both in force and in the number of coughs. It was soon found that the first few coughs were usually rather unproductive and that it was necessary to have the individual cough several minutes before the coughs became roughly equal in productiveness. The Petri dishes were in every case at a distance of from 12 to 14 inches from the face. The gauze was unwashed and was sterilized in the steam autoclave at 15 pounds pressure for thirty-nine minutes and then allowed to dry before being used. A chart of the protocol of an experiment is given herewith. It will be noticed that if one takes the sum of the strands counted in the warp and in the woof in the case of each quality of gauze—B and B, 32 and 26, total 58; L and L, 28 and 24, total 52; Lakeside, 24 and 20, total 44; Dearborn, 20 and 14, total 34—and multiplies in each case by the number of layers of gauze necessary in each case to protect fully the exposed plate, these figures quite closely correspond: $5 \times 58 = 290$; $6 \times 52 = 312$; $7 \times 44 = 308$; $9 \times 34 = 306$.

The total number of colonies coughed through various layers of gauze cannot be compared directly with the total number of colonies coughed through one of the same series of masks resterilized and used at some other time, for the contamination of the mouth is not at all the same at different times. A complete series of masks must be run through at one sitting. This is done on several different occasions and the results for each mask averaged. The results with two or more patients can be compared only by taking the number of colonies on the respective control plates as a total and expressing all other counts in percentages of this total. The percentages can then be directly compared. The only constant feature in regard to the various masks seems to be the thickness at which absolute protection of the place is reached. This can be tested with very little trouble and without going through the entire series of masks. The conclusion reached is that the amount of gauze placed in superimposed layers necessary to give fully complete protection when the mask is worn over the face of the one infected lies very close to the equivalent of 300 strands of cotton fiber to the square inch.

In several instances the experiment was conducted as described, and in addition after each mask had been worn from five to fifteen minutes another Petri dish was then exposed and coughed at in the same manner. The object was to see whether the filtration was as efficient after the mask had been worn for some time as it was when first put on. The workers were biased in their belief that the mask would not be sufficient, and quite a large number of parallel and control experiments were necessary to remove this bias. It was, however, conclusively shown that no more organisms penetrate the mask after it has been worn for thirty minutes than when it is first applied to the face, provided, of course, all other factors remain constant. The mask if dried and reversed will become not a filter but a disseminator of organisms. Experiments to determine the effect of drying used masks which are then reapplied to the face have been so at variance with each other as to be quite inconclusive. It is our opinion, however, that this drying process is rendered practically harmless when the mask is reapplied without reversal after the patient has breathed through the mask several times and the expired air has been allowed to moisten it again. It seems that the practice as followed here of marking the face side of the mask by a small strand of black thread is a very good one and should be followed out in all masks.

Our second series of experiments was directed toward a determination of how many superimposed layers of gauze are necessary to protect when applied over the face of the uninfected, rather than over the mouth of the infected. To represent the recipient, a Petri dish was masked and coughed at from a distance of from 12 to 14 inches with no mask over the face of the subject. One feature entirely neglected in this experiment which is present in the actual clinical test of the mask is the inspiratory suction through the mask. The same series of masks were used although only one quality of gauze was completely worked out. This was the Lakeside (24 by 20). Five layers were necessary to protect the plate completely, which amount represents 220 strands of cotton fiber to the square inch.

A third series of tests were made with duplicate masks; one was placed over the face and one over the exposed plate, each succeeding mask being increased in thickness by one layer of gauze. The series embraces all thicknesses from one to eight. The gauze used for the series was Lakeside (24 by 20). The figures obtained tend to show that cotton fibers in superimposed layers of gauze to the extent of 350 to the square inch equally divided between the infected and uninfected will prevent droplet infection. This result may be interpreted as inconsistent with the figures of the protocol given. This apparent inconsistency is, we believe, quite within the limit of error of the methods used. It can be shown that the mask over the face of the infected is of value in the prevention of the uninfected when used in addition to the mask over the plate which represents the uninfected.

Experiments made with washed gauze demonstrated the following facts: The better qualities of gauze B and B (32 by 26), L and L (28 by 24) and Lakeside (24 by 20) become more efficient through shrinkage of the fiber, and if too thick at the outset become almost unbearable after repeated washing. Here also there is some question whether or not most of the respiratory exchange takes place about the edges of the mask, rather than through it. With the very poor quality of gauze, Dearborn (20 by 14), there is a decided tendency for the gauze to pull apart and leave very large gaps in the individual layers. We are of the opinion that this gauze should never be used for this purpose.

Work with the reknit gauze has demonstrated that it is almost impossible, because of its remarkable stretching, to estimate its efficiency. Even under ordinary conditions it does not remain the same for more than a few minutes at a time. We hesitate to recommend its use, as we have seen a thick mask so stretched out and thinned after an hour's wear that it was quite obviously useless.

A small amount of work was done with Turkish toweling. Preliminary experiments tend to show that one layer of this material makes a highly efficient droplet filter, and it is comfortable to wear. The question of expense, and also the question of the effect of wear on this material, are to be considered.

SUGGESTIONS FOR MASKS

1. It is our belief that gauze of the quality of Lakeside (24 by 20) or L and L (28 by 24) should be used in four layers, B and B (32 by 26) in three layers, provided all persons are masked. In case only the infected are masked, Lakeside (24 by 20) should be seven layers thick, L and L (26 by 24) six layers, and B and B (32 by 26) five layers. If the masks of this thickness are used, the ambulances and receiving offices and particularly the clothing of uninfected patients would probably not become infected.
2. Masks should be 8 inches in length with the edges turned in and stitched. They should be 5 inches in width.
3. Two braids should be used, each 1 yard long and sewed along the upper and lower borders of the mask so as to leave a free end 14 inches long at each side.
4. The masks should be marked on the face side by a black thread tied in the gauze.

THE ARMY SHOE AND MILD FOOT DISABILITIES

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Extensive foot inspections were made of the soldiers who were trained during the latter half of 1917 and early part of 1918. These inspections were first made when the men were inducted into service and while the feet still showed the abnormal conditions that were present in civil life, and again before they were sent overseas. Comparison of the results of the two examinations disclosed that marked changes had occurred, and the experience of civil orthopedic practice is verified by these observations. These changes have been almost uniformly favorable to better function of the feet, and when unfavorable results have occurred, the reason has been readily traced.

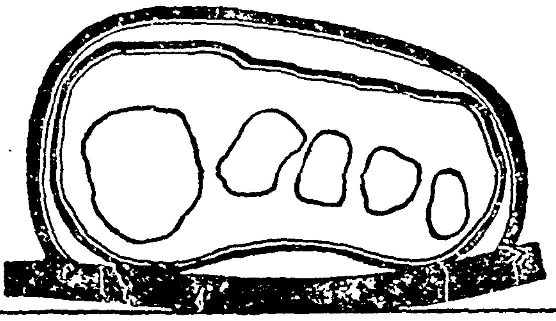
In endeavoring to account for the marked changes observed, there are two factors that stand out as most potent. First is the Army shoe and second is the increased personal care and interest in foot health on the part of the officers and men from the instruction by the orthopedic surgeons.

Extensive observation (covering several hundred thousasd cases) shows that 98 per cent. of the recruits can be fitted with the Army shoe. This fact alone is the strongest possible recommendation for its use, but an additional fact still more strongly recommends it. This is the beneficial influence of the shoe on the foot of the wearer. When a shoe is properly fitted at the beginning of service, there should be about two-thirds inch between the end of the longest toe and the end of the shoe. After from four to six months of training there should be at least half an inch. The heel should be held fairly snug in the shoe, the vamp should fit smoothly over the forefoot, and the ball of the foot should rest in its seat near the posterior turn of the sole. In fitting shoes, it must always be remembered that a shoe will enlarge sidewise but never lengthwise. Also, that repairing tends to shorten a shoe, and rebuilding actually does shorten it.

Short shoes cause more foot troubles than narrow ones; hence the great need of the two-thirds inch room in the length of the shoe to accommodate the lengthening of the foot in the first four or five months of training. This length and breadth of shoe permits a degree of function hitherto unknown to the foot. There is greater freedom of toe action, which affects both muscles and joints. This is followed directly by lengthening of ligaments, increase in size of muscles and alteration of relations of all the anatomic elements of the foot. These factors contribute directly to an increase in the size of the part. I have repeatedly seen cases in which the original size of the shoe had been strongly objected to as being entirely too large, but after a few months of intensive training and perhaps using extra or thicker socks, the fit was entirely satisfactory by reason of the development of the foot.

With the greater freedom of action in the larger shoe, there occurs absence of pressure on toe-joints, and corns disappear. There is freedom from pressure on nails, and "ingrowing" gradually ceases, especially if a little aid is given by proper cutting and attention. Toes that have been crowded together have sufficient room for normal function, and under the constant muscle pull and better distribution of weight, both of which forces are almost constantly active in the soldier's foot for from twelve to fourteen hours a day, they gradually assume a normal relation. In many instances, a moderate degree of overlapping has gradually lessened to a very nearly normal position. Similar results obtain in various other conditions in which secondary pathologic changes have not produced a degree of permanence that will yield only to surgery. These superficial conditions are always of mechanical origin, and almost universally from improper foot coverings, not from faulty function primarily. When, therefore, these mechanical conditions are remedied or removed, the effects disappear and the part gradually develops into as nearly normal a state as is compatible with existing pathologic changes or conditions.

As the result of greater freedom of action, the intrinsic muscles of the foot, which have long been inactive and atrophied, gradually resume again their function. This chiefly concerns the maintenance of the transverse and longitudinal arches. With increase in activity, there is also increase in size. The foot develops power and endurance. The fibrous attachments strengthen to meet the greater strain. Circulation improves by reason of the greater functional activity and the lessening of constriction. This promotes nutrition and a beneficial circle is established to replace the former vicious one. Greater elasticity and increased range of motion in the various joints of the foot allow a greater variation in its length from changing function and strain. The tonicity of the large leg muscles also improves and the support essential to weight-bearing and progression is readily developed. This in turn gives a better position to the foot so far as concerns the carrying of the body weight, and the onset of static disability is prevented.


Foot resting on the two sides of a concave inner sole, without support to the transverse arch.

One other very striking result from the wearing of the properly fitted shoe is in troubles with the transverse or metatarsal arch. Foot inspection shows a large number of men with callosities under the metatarsal heads (ball of the foot). This means a loss of the transverse arch, and may be associated with metatarsalgia (Morton's foot) or with painful callous areas or both.

The preservation of the transverse arch depends mostly on the strength of the intrinsic foot muscles and the vicious circle following the wearing of improper shoes is readily succeeded by sagging and loss of this arch. Furthermore, in the manufacture of a shoe, the inner sole is likely to be concave instead of convex. This is due to the fact that the sole of the last is convex; hence, as the leather is fitted over it, the result is a concave surface inside. The foot then rests on the two sides of this and has no support in the center, as in the accompanying illustration. If now the muscles that furnish support are weak and atrophied, severe use will almost surely result in loss of the foot arch (transverse) before sufficient power can be restored to them.

From the foregoing will be readily seen the great need of proper fitting of the shoes to maintain the best health of the feet. The regulation army shoe has all the essential qualities for foot health and is proving its worth to the soldier. The educational phase of the problem on the soldier is an equally great one, and its influence will persist for a long period after the war ends. The soldier will be a center for education in proper foot wear by reason of his comfort in shoes that are long enough and which conform to the shape of the foot.

FACE MASKS IN INFECTIONS OF THE RESPIRATORY TRACT*

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The use of face masks by those whose duties necessitate their coming in contact with cases of respiratory infection has now become general. The object of such masks is twofold: first, to protect the wearer against infectious material from the respiratory passages of the patient, and second, to protect the patient from such material as the attendant may himself carry in his mouth and nose. The types of masks worn, however, have been variable, and the efficiency of many of these types as barriers to the transmission of bacteria is certainly open to question. We have therefore undertaken experiments with some of the commoner types of masks in order to prove their efficiency or nonefficiency in preventing the dissemination of infectious material from the mouth during the acts of speaking or coughing.

Our first object was to determine, by means of agar plates exposed at different distances from an observer, how far infectious material might be projected from the mouth during speaking or coughing.

Our second object was to determine to what degree the wearing of a mask modified the projection of such material during the same acts.

METHODS AND TECHNIC

B. prodigiosus was selected as a suitable organism to introduce into the mouth for these experiments, because of its innocuous character, and because its pigment formation makes its recognition easy on agar plates.

For our experiments two small rooms were selected which were used for no other purpose during this time. Each of these rooms contained a metal topped table and a chair. The arrangement of the furniture is shown in Figure 1. When the observer was seated in the chair, the table top was just below his ensiform. Agar plates exposed on the surface of the tables before the beginning of the experiments showed no *B. prodigiosus* present in the circulating air and dust.

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*From the Hospital of the Rockefeller Institute for Medical Research.

Experiment 1.—*To determine the limits of projection of B. prodigiosus from the mouth during ordinary speech, loud speech and coughing.*—The observer first thoroughly rinsed his mouth and gargled his throat with a suspension of *B. prodigiosus* in 0.85 per cent. sodium chlorid solution, the viability of which was proved by subcultures at suitable intervals. The observer then entered the room and seated himself in the chair, facing down the length of the table. In line with the observer's mouth, agar plates were exposed from 1 to 6 feet distant, except in some of the coughing experiments, when plates were exposed up to a distance of 10 feet.

The observer then proceeded: (1) to talk in an ordinary conversational tone for five minutes; or (2) to talk in a loud tone for five minutes; or (3) to cough as much as possible for five minutes. In one instance ordinary conversational speech was maintained for a period of thirty minutes. At the conclusion of his speaking or coughing, the observer left the room. In order to allow the droplets in the air, if present, to settle on the surface of the plates, the plates remained exposed an additional ten minutes after the period of speaking or coughing. The colonies occurring on the plates were counted and recorded after seventy-two hours' incubation at room temperature.

Agar plates were exposed for one hour in the rooms between different stages of this experiment. By this means we found that an eight hour interval between the periods of talking or coughing was sufficient to insure the absence of *B. prodigiosus* in the circulating air.

The results of the projection of *B. prodigiosus* from the uncovered mouth during ordinary conversational speech, loud speech, and coughing, are shown in Table 1. The experiments were paralleled by two observers working in separate rooms.

TABLE 1.—PROJECTION OF B. PRODIGIOSUS FROM THE MOUTH ON AGAR PLATES DURING CONVERSATIONAL SPEECH, LOUD SPEECH, AND COUGHING*

	Distance of Plates from Operator in Feet									
	1	2	3	4	5	6	7	8	9	10
Speaking in ordinary conversational tone for 5 minutes	**1**	**0**	**0**	**0**	**0**	**0**	—	—	—	—
	0	**0**	**0**	**0**	**0**	**0**	—	—	—	—
	0	**1**	**0**	**0**	**0**	**0**	—	—	—	—
	13	**2**	**0**	**0**	**0**	**0**	—	—	—	—
Speaking in ordinary conversational tone for 30 minutes	**16**	**0**	**0**	**0**	**0**	**0**	—	—	—	—
Speaking in loud tone for 5 minutes	**72**	**0**	**0**	**0**	**0**	**0**	—	—	—	—
	49	**3**	**2**	**0**	**0**	**0**	—	—	—	—
	0	**0**	**0**	**0**	**0**	**0**	—	—	—	—
	115	**5**	**5**	**1**	**0**	**0**	—	—	—	—
Coughing for 5 minutes	**337**	**381**	**245**	**76**	**26**	**4**	—	—	—	—
	—	—	—	**248**	**116**	**94**	**32**	**18**	**17**	**8**
	242	**64**	**19**	**5**	**3**	**1**	—	—	—	—
	—	—	**4**	**6**	**3**	**1**	**2**	**0**	**0**	**0**

* Number of colonies of B. prodigiosus on each plate in boldface figures; dash indicates plates not exposed.

Summary of Table 1

1. *Ordinary Conversational Speech for Five Minutes.*—In three out of four trials, *B. prodigiosus* was recovered in small numbers on plates 1 or 2 feet distant, but no farther.

2. *Ordinary Conversational Speech for Thirty Minutes.*—One trial. *B. prodigiosus* was recovered only on the 1 foot plate in slightly larger numbers than in any of the preceding experiments.

3. *Loud Speech for Five Minutes.*—In three out of four trials, *B. prodigiosus* was recovered in moderate numbers on plates from 1 to 4 feet distant.

4. *Coughing for Five Minutes.*—In all of four trials, *B. prodigiosus* was recovered, usually in large numbers, on plates up to 6 feet distant.

In two trials in which plates were exposed up to 10 feet, *B. prodigiosus* was once recovered up to 7 feet, and once up to 10 feet.

MASKS

For the subsequent experiments, masks were used. The masks employed by us were of uniform construction, but differed in the nature of the material used and in thickness.

Three sorts of material were employed: (1) coarse gauze; (2) medium gauze, and (3) buttercloth (Fig. 2). From each sort masks were made of from two to ten layers in thickness.

Each mask was about 6 by 8 inches, hemmed on the edges, and made with four plaits on each lateral edge. The mask was equipped with tapes on the four corners by which to tie it behind the head (Fig. 3). When extended to the full width by a fanlike extension of the plaits, the mask presented sufficient surface to cover nose and mouth, and to come below the chin (Fig. 4).

Experiment 2.—*To determine the effect of a coarse gauze mask on the projection of B. prodigiosus from the mouth during ordinary speech, loud speech, and coughing.*—The methods and technic of this experiment were the same as in Experiment 1, except that during talking or coughing a coarse gauze mask was worn. Each of the experiments of speaking in an ordinary tone, speaking in a loud tone, and coughing, was done with each mask of from two to ten thicknesses of gauze. The results of these experiments are shown in Table 2.

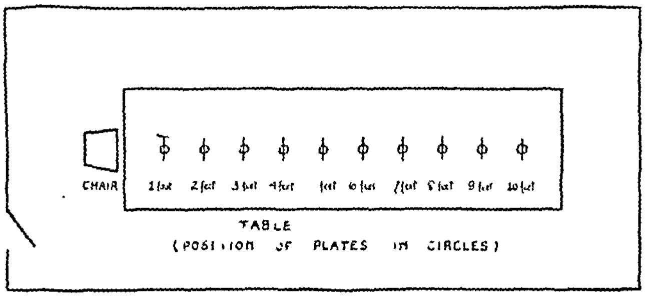

Fig. 1.—Arrangement of furniture and plates for tests.

TABLE 2.—PROJECTION OF B. PRODIGIOSUS FROM THE MOUTH WHILE THE FACE IS COVERED WITH A MASK OF COARSE GAUZE

Speaking in Ordinary Conversational Tone for 5 Minutes						Number of Layers of Gauze in Mask	Speaking in Loud Tone for 5 Minutes						Number of Layers of Gauze in Mask	Coughing for 5 Minutes					
Distance of Plates from Operator in Feet							Distance of Plates from Operator in Feet							Distance of Plates from Operator in Feet					
1	2	3	4	5	6		1	2	3	4	5	6		1	2	3	4	5	6
0	0	0	0	0	0	2	75	1	0	0	0	0	2	700	800	610	397	128	23
0	0	1	0	0	0	3	18	1	0	2	0	0	3	125	84	31	5	4	2
0	0	0	0	0	0	4	22	1	0	0	0	0	4	400	280	120	35	8	3
0	0	2	0	0	0	5	2	0	0	0	0	0	5	140	160	100	42	15	1
0	0	0	0	0	1	6	5	0	0	0	0	0	6	65	20	10	4	0	1
0	0	0	0	0	0	7	3	0	0	0	0	0	7	68	63	15	0	0	0
0	1	0	0	0	0	8	2	0	0	0	0	0	8	8	1	0	0	0	0
0	0	0	0	0	0	9	0	0	0	0	0	0	9	6	4	2	0	0	0
0	0	0	0	0	2	10	0	0	0	0	0	0	10	8	2	0	0	0	0

Summary of Table 2

Coarse gauze masks worn from two to ten layers thick.

1. *Ordinary Conversational Speech for Five Minutes.*—One trial with each mask. *B. prodigiosus* was recovered five times, always in small numbers, on plates at variable distances. Three times organisms were found at 2 to 3 feet and twice at 6 feet. The latter possibly represents an error, as even without masks we never recovered organisms at this distance during ordinary

speech. The error, if present, is insignificant, since the remaining data are conclusive.

2. *Loud Speech for Five Minutes.*—With each mask, one trial. *B. prodigiosus* was recovered on plates from 1 to 4 feet distant with every mask up to eight thicknesses—in fairly large numbers with those up to four thicknesses, and in small numbers with those of from five to eight thicknesses.

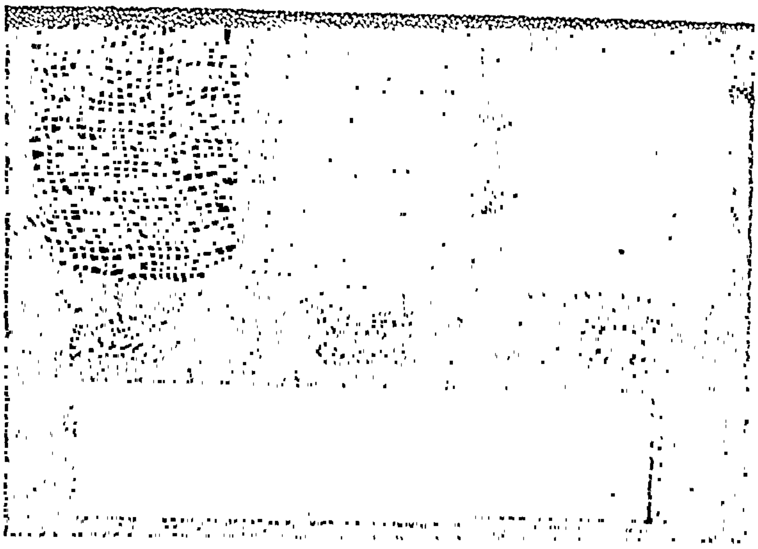

Fig. 2.—Material employed for masks.

3. *Coughing for Five Minutes.*—With each mask, one trial. *B. prodigiosus* was recovered in every instance. It was recovered in large numbers with masks of six thicknesses or less, up to 6 feet. With masks of greater thickness it was recovered in larger or smaller numbers at a distance of 2 or 3 feet.

Experiment 3.—*To determine the effect of a medium gauze mask in the projection of B. prodigiosus from the mouth during ordinary speech, loud speech, and coughing.*—The methods and technic of this experiment were exactly the same as in the preceding, except that the masks used were of a closer meshed gauze. The experiments of talking in an ordinary tone, talking in a loud tone, and coughing were repeated with each mask of from two to five layers in thickness.

Since the masks of from three to five layers proved to be effective as a barrier to organisms during ordinary speech, this experiment was abandoned with the thicker masks. Only loud talking and coughing were attempted with the masks of from six to ten layers.

The results of this experiment are shown in Table 3.

TABLE 3.—PROJECTION OF B. PRODIGIOSUS FROM THE MOUTH WHILE THE FACE IS COVERED WITH A MASK OF MEDIUM GAUZE

Speaking in Ordinary Conversational Tone for 5 Minutes						Number of Layers of Gauze in Mask	Speaking in Loud Tone for 5 Minutes						Number of Layers of Gauze in Mask	Coughing for 5 Minutes					
Distance of Plates from Operator in Feet							Distance of Plates from Operator in Feet							Distance of Plates from Operator in Feet					
1	2	3	4	5	6		1	2	3	4	5	6		1	2	3	4	5	6
5	0	0	0	0	0	2	220	4	0	0	0	0	2	15	6	1	1	1	0
0	0	0	0	0	0	3	1	0	1	0	0	0	3	39	25	12	2	1	0
0	0	0	0	0	0	4	0	0	0	1	0	0	4	45	21	8	1	0	0
0	0	0	0	0	0	5	0	0	0	0	0	0	5	2	1	0	0	0	0
—	—	—	—	—	—	6	1	0	0	0	0	0	6	0	1	0	0	0	0
—	—	—	—	—	—	7	2	0	0	0	0	0	7	8	10	7	9	7	6
—	—	—	—	—	—	8	0	0	0	0	0	0	8	5	0	1	1	1	0
—	—	—	—	—	—	9	0	0	0	0	0	0	9	3	6	1	1	4	1
—	—	—	—	—	—	10	0	0	0	0	0	0	10	1	0	0	1	0	0

Summary of Table 3

Medium gauze masks worn, from two to ten layers thick.

1. *Ordinary Conversational Speech for Five Minutes.*—With each mask of from two to five layers, one trial. *B. prodigiosus* was recovered in small numbers only on the 1 foot plate with two layer mask.

2. *Loud Speech for Five Minutes.*—With each mask of from two to ten layers, one trial. *B. prodigiosus* was recovered in five cases, never beyond 4 feet, usually in small numbers. The 1-foot plate with the two layer mask was heavily seeded.

3. *Coughing for Five Minutes.*—With each mask of from two to ten layers, one trial. In every instance *B. prodigiosus* was recovered in moderate numbers on plates from 2 to 6 feet distant.

Experiment 4.—*To determine the effect of a buttercloth mask on the projection of B. prodigiosus from the mouth during ordinary speech, loud speech and coughing.*—The methods and technic of this experiment were the same as used in the preceding, but the masks used were made of buttercloth. Ordinary speech, loud speech, and coughing were repeated with each mask of from two to ten layers in thickness.

The results of these experiments are shown in Table 4.

TABLE 4.—PROJECTION OF B. PRODIGIOSUS FROM THE MOUTH WHILE THE FACE IS COVERED WITH A MASK OF BUTTERCLOTH

Speaking in Ordinary Conversational Tone for 5 Minutes						Number of Layers of Gauze in Mask	Speaking in Loud Tone for 5 Minutes						Number of Layers of Gauze in Mask	Coughing for 5 Minutes					
Distance of Plates from Operator in Feet							Distance of Plates from Operator in Feet							Distance of Plates from Operator in Feet					
1	2	3	4	5	6		1	2	3	4	5	6		1	2	3	4	5	6
0	0	0	0	0	0	2	0	0	0	0	0	0	2	0	2	0	0	0	0
0	0	0	0	0	0	3	0	0	0	0	0	0	3	0	0	0	0	0	0
0	0	0	0	0	0	4	0	0	0	0	0	0	4	0	0	0	0	0	0
0	0	0	0	0	0	5	0	0	0	0	0	0	5	0	0	0	0	0	0
0	0	0	0	0	0	6	0	0	0	0	0	0	6	0	0	0	0	0	0
0	0	0	0	0	0	7	0	0	0	0	0	0	7	0	0	0	0	0	0
0	0	0	0	0	0	8	0	0	0	0	0	0	8	0	0	0	0	0	0
0	0	0	0	0	0	9	0	0	0	0	0	0	9	0	0	0	0	0	0
0	0	0	0	0	0	10	0	0	0	0	0	0	10	0	0	0	0	0	0

Summary of Table 4.

Buttercloth masks worn, from two to ten layers thick.

1. *Ordinary Conversational Speech for Five Minutes.*—With each mask, one trial. *B. prodigiosus* not recovered.

2. *Loud Speech for Five Minutes.*—With each mask, one trial. *B. prodigiosus* not recovered.

3. *Coughing for Five Minutes.*—With each mask, one trial. *B. prodigiosus* recovered at 2 feet with the two layer mask only.

Repetition of the coughing experiments while two or three layer masks, both washed and unwashed, were worn, showed like results.

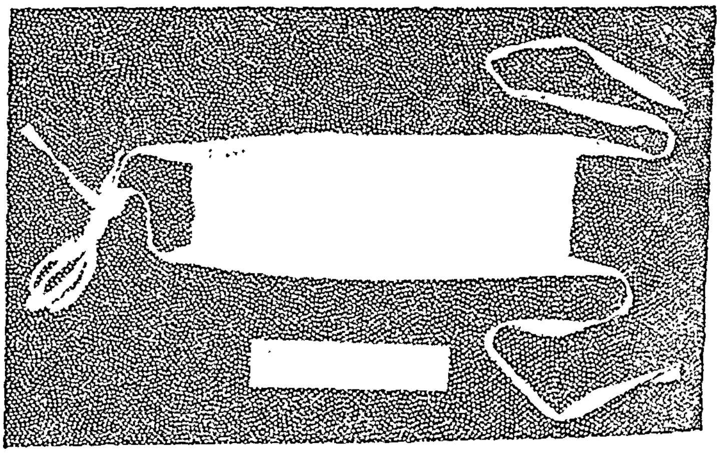

Fig. 3.—Mask, with tapes.

COMMENT

In 1899, Flügge and his followers,[1] working on the problem of tuberculosis infection, first advanced the theory of droplet infection. Briefly speaking, their experiments showed that if an observer retained in his mouth a suspension of *B. prodigiosus*, the organism could be recovered on agar plates a meter distant during the acts of speaking, sneezing or coughing. In general they believed that if a person were coughed at from a distance of less than a meter, he might be infected by means of the projected droplets.

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[1] Flügge: Ztschr. f. Hyg., 1899, **30**, 107. Laschschenko: Ibid., p. 125. Heyman: Ibid., p. 139. Hillyer: Brit. Med. Jour., 1903, **1**, 595

From our own work, however, we judge that the infected zone has a considerably greater radius. Our data indicate that during ordinary or loud speech, droplets are rarely projected more than 4 feet, irrespective of the duration of the experiment. In talking for thirty minutes there was no greater projection of bacteria than in talking for five minutes, though during the longer time there may be a heavier seeding of a plate within the effective range. During coughing, however, the danger zone is immensely widened. We were surprised at the distance we could project the organisms during a hard spell of coughing. At first we exposed plates only to a distance of 6 feet. Subsequently we exposed plates up to a distance of 10 feet, on which we recovered *B. prodigiosus* in sufficient numbers to suggest the possibility of even greater projection. We found that the chances of recovering *B. prodigiosus* from the more distant plates were increased if the observer renewed the organisms in his mouth during the period of coughing. From our work it would seem that the danger zone about a coughing patient has at least a 10-foot radius.

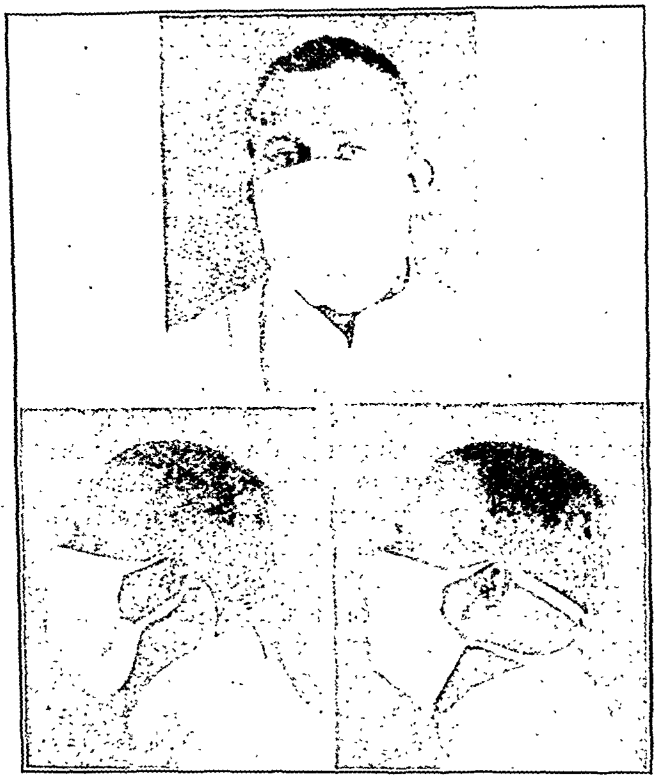
Fig. 4.—The mask as worn.

Our work has also convinced us of the futility of masks constructed from the coarser types of gauze, irrespective of thickness. We were constantly able to cough organisms through ten thicknesses of such material. A three layer buttercloth mask, however, appears to be effective in preventing the distribution of organisms from the mouth even during violent coughing. We have repeated experiments with this mask both before and after washing, with uniform results. Such a mask is not only effective, but easy to make and perfectly comfortable to wear.

These masks are also inexpensive. The quoted price per square yard of buttercloth is 14 cents. A square yard makes nine masks, each three layers in thickness. Each mask requires fifty-six inches of tape, costing about 2 cents. The cost per mask therefore is only between 3 and 4 cents, exclusive of labor. A mask may be repeatedly washed and used indefinitely. An indelible mark should be made on one side of the mask, and when the mask is put on, the same side should always be next to the face.

We have been using these masks in the Hospital of the Rockefeller Institute for physicians and nurses, and in some instances for patients; for example, during carriage to and from the roentgen-ray room, or when being moved about the corridors. They have also been used for ambulatory patients with head colds or other mild respiratory infections.

CONCLUSIONS

1. During ordinary or loud speech, infected material from the mouth is rarely projected to a distance of 4 feet, and usually less. A 4-foot danger zone exists about the patient under these conditions.
2. During coughing, infected material from the mouth may be projected at least 10 feet. The danger zone about a coughing patient has, then, a minimum radius of 10 feet.
3. Masks of coarse or medium gauze of from two to ten layers do not prevent the projection of infected material from the mouth during coughing. Such masks are worthless, therefore, in preventing the dissemination of respiratory infections.
4. A three layer buttercloth mask is efficient in preventing the projection of infectious material from the mouth during speaking or coughing. It is a suitable mask, therefore, to be worn in connection with respiratory diseases.

New and Nonofficial Remedies

The following additional articles have been accepted as conforming to the rules of the Council on Pharmacy and Chemistry of the American Medical Association for admission to New and Nonofficial Remedies. A copy of the rules on which the Council bases its action will be sent on application. W. A. Puckner, Secretary.

SOLARGENTUM-SQUIBB.—A compound of silver and gelatin, containing 19 to 23 per cent. of silver in colloidal form.

Actions and Uses.—See Silver Protein Compounds (New and Nonofficial Remedies, 1918, p. 361).

Dosage.—Solargentum-Squibb is used in solutions containing 1 to 25 per cent., or more. It is also used in the form of bougies or suppositories.

Manufactured by E. R. Squibb & Sons, New York. No U. S. patent or trademark.

Solargentum-Squibb is produced by the interaction of silver oxide and gelatin in the presence of an alkali. When combination has occurred, the solution is concentrated *in vacuo* and the product scaled.

Solargentum-Squibb occurs in the form of black, lustrous, odorless, non-hygroscopic scales. It is very soluble in distilled water; insoluble in oils and alcohol.

No precipitate is produced when sodium chloride solution is added to an aqueous solution of solargentum-Squibb. An aqueous solution of solargentum-Squibb does not precipitate albumin; it is decomposed with precipitation by addition of free acids; ferric chloride decolorizes the solution.

To about 1 Gm. of powdered solargentum-Squibb, accurately weighed in a porcelain crucible, add a mixture of 4.5 Gm. of lead oxide and 0.5 Gm. of powdered tartaric acid. Rotate and mix in a crucible. Heat continuously until thoroughly carbonized and then heat in a blast flame until the lead button formed is about half its original size. Allow the crucible to cool, then place it in a beaker and dissolve the lead button containing the silver in dilute nitric acid. Transfer liquid, with washings, into an Erlenmeyer flask and titrate the silver nitrate with tenth-normal potassium sulphocyanate volumetric solution, using ferric ammonium sulphate as an indicator. The silver content corresponds to not less than 19 per cent. and not more than 23 per cent. of metallic silver (each Cc. of tenth-normal potassium sulphocyanate volumetric solution is equivalent to 0.0107 Gm. silver).

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SATURDAY, OCTOBER 12, 1918

QUARANTINE AND ISOLATION IN INFLUENZA

As indications of the attitude of civilian health officials with respect to the value and practicability of quarantine in influenza, it may be noted that the Illinois Department of Health has ordered that the patient must be quarantined until all clinical manifestations of the attack have subsided and the temperature has been normal for three successive days; that in New York City the patient is quarantined and, furthermore, so it is stated, the health department is prepared to compel patients "who may be so situated as to be a menace to the community to go into hospitals." In these and other places, influenza and pneumonia have been made reportable diseases.

The officials of the Navy at first glance seem to be of a different opinion in regard to quarantine in influenza, as indicated by the following extract from Bulletin 37,[1] of the Division of Sanitation of the Bureau of Medicine and Surgery, dated Aug. 9, 1918:

> *Control in the Navy.*—Quarantine and isolation are impracticable on account of the wide distribution of the organism [*B. influenzae*] in healthy persons and the number of unrecognizable cases.

This sounds like a decidedly reactionary statement, but it is possible that it refers to the units in which cases arise, or possibly to persons who have been in especially close contact with those that fall sick, because the remaining sentences of the paragraph read:

> Patients, however, should be put to bed at once, and bed isolation, prevention of droplet infection, and prompt disinfection of mess gear, handkerchiefs, etc., practiced as in measles. Where sick bays or wards are not available for isolation, the use of sheet screens between patients is to be recommended.

Whatever the real meaning of the sentence to the effect that quarantine and isolation are impracticable, the danger to life from influenza in this epidemic is so grave that it is imperative to secure for the individual patient the most complete isolation, whether in home or hospital, not only to prevent the spread of infection from the patient but also to prevent new and secondary infections from reaching the patient. This need to protect the sick is not emphasized in current advice and instructions to the public from the official and other sources. It appears, too, that in many if not most hospitals little or no attention is paid to the danger of cross-infections with virulent bacteria among their influenza patients. So far as we know, the actual situation in influenza seems to be this: THE PRECISE CAUSE OF THE PRIMARY ACUTE RESPIRATORY INFECTION IS NOT KNOWN—IT MAY BE THE INFLUENZA BACILLUS; AS YET DEFINITE PROOF IS WANTING—BUT THE MOMENTOUS PERIL SO FAR IS THE DEVELOPMENT OF PNEUMONIA, AND THIS APPEARS TO BE ASSOCIATED WITH AND IN ALL LIKELIHOOD CAUSED BY DIFFERENT BACTERIA, OF WHICH THE INFLUENZA BACILLUS, HEMOLYTIC STREPTOCOCCI, AND PNEUMOCOCCI ARE THE MOST IMPORTANT. We know that in experiments, streptococci and pneumococci may be raised enormously in virulence by successive animal passage, and there is good reason to believe that the virulence for man is increased by repeated transmission from patient to patient. The influenza bacillus may act in the same way, that is, a particular strain may acquire increasing virulence as it passes from the respiratory tract of patient after patient. It is to guard against dissemination by contact and droplet infection of strains with exalted virulence that individual isolation is demanded. The conditions in the present influenza outbreak are analogous to those in the cantonments with respect to streptococcus bronchopneumonia in measles, and are to be met in the same ways so far as possible. It is realized that at present the situation in many places is such that individual isolation and other measures to prevent cross-infection are out of the question; but the importance of the principle discussed must be recognized so that with time our methods of caring for respiratory infections may become more and more effective.

ADEQUATE SUPPLY OF PHYSICIANS MAKES LOWER EDUCATIONAL STANDARDS UNNECESSARY

According to the Census Bureau estimate for 1917, the population of the United States was 106,543,317, and according to the new American Medical Directory, the total number of physicians is 147,812. At the present time, therefore, there is one physician to every 720 people. In the various countries of Europe, just before the world war began, the proportion of physicians, according to the best available authorities, was from one to every 1,500 to one to every 2,500 people.[1] Numerically speaking, therefore, more than half of the physicians of the United States, or actually 76.783, might be withdrawn from civil practice before the proportion to the population would be as low as the highest proportion in any country of Europe, namely, one to every 1,500 of population. One physician to every 1,500 people could readily supply all the needs in thickly populated communities, but the more sparsely settled rural communities would doubtless need a larger proportion—say one to every 1,000. On this basis for the entire country, it would require one physician for about every 1,200 people. If properly distributed, this would be a reasonable proportion considering the improved roads and other means of accessibility by which a physician can now cover a much wider territory than heretofore. Based on the number of applications now going through for commissions in the Medical Department of the Army, there will be at least 35,000 physicians who have been commissioned or will have been offered commissions in the Army and the Navy by Nov. 1, 1918. As a maximum, however, not more than 40,000 physicians could possibly be needed by the government service unless the war should continue more than two or three years longer. This would still leave in civil practice one physician to every 988 population. The annual output from the medical schools in recent years has been approximately 3,000 physicians, more than covering the annual loss from deaths.

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[1] Measures for the Prevention of the Introduction of Epidemic Influenza, Pub. Health Rep., 1918, **33**, 1540.

[1] We have not included in these calculations the thousands of osteopaths, chiropractors, naprapaths, physcultopaths, and other cult practitioners who, outside of the United States and Canada, are not to be found in other countries.

It is evident, therefore, that so far as the supply of physicians is concerned, there is clearly no danger of a shortage being produced by the present world war even if we should be called on to supply the needs of some of our allies. Consequently there is positively no basis for arguments favoring the reduction of educational standards. As a matter of fact, our medical colleges might all be closed for several years and the annual supply of physicians entirely cut off, and the number of physicians in the United States would still remain in a higher proportion to the population than in the most favored country of Europe. The only valid reason why medical schools should be kept going is that in recent years they have turned out physicians who are eminently better qualified than those of earlier years, and this one reason would be removed if educational standards should be lowered. It is only during the last eight or ten years that the majority of medical graduates each year have had the benefit of higher preliminary qualifications, of better equipped laboratories, of better hospital facilities, and of a training under larger numbers of full time, salaried, expert teachers. Our superabundance of physicians is mostly made up of those who did not have the benefit of these greatly improved conditions in medical schools, many of whom, however, be it said to their credit, through graduate courses and study, have kept up with the advances made in medical knowledge.

Those who are arguing for a reduction in standards on the plea that there is a need of physicians are either misinformed in regard to the facts or have certain special interests which they are striving to uphold. In the light of these facts it is urged that licensing boards generally enforce the present reasonable standard of two years of collegiate work as the minimal requirement of preliminary education. The argument that there is a dearth of physicians should not be looked on as an excuse for lowering educational standards in the interest of any pseudomedical cult. Let the present educational standards, which have been successfully established in recent years, be upheld so that the name of America, from the standpoint of medical education, may retain the high position educationally that it has recently attained among civilized nations.

IS EPIDEMIC POLIOMYELITIS PREVALENT IN ENGLAND AND FRANCE?

During the last six months there has been observed in England[1] and France[2] what has seemed an epidemic of a rather obscure origin. The various names applied to the condition—infective ophthalmoplegia, toxic ophthalmoplegia, acute infective ophthalmoplegia, acute encephalitis, epidemic lethargic encephalitis, botulism, Heine-Medin disease, etc.—show that considerable doubt prevails as to its nature. In England the largest number of cases have been recorded in London, but cases have been reported from many other parts of that country and of Wales.

According to Hall,[1] the main features of the cases so far observed are as follows: The patient, while in ordinary health, begins to be languid and drowsy, with or without other symptoms. In a few hours or days the weakness has increased and, indeed, may amount to complete prostration, so that he lies helpless in bed and can hardly move a muscle. Now the drowsiness becomes more marked and deepens into lethargy. Fever may be absent, or it may be present from the first, become severe, and persist. Cerebral excitement and delirium have been prominent features in some cases. In most cases, local symptoms pointing to lesions in the bulbopontile area are present at some time or other. Of these, ptosis, ophthalmoplegias of varying extent, nystagmus, facial palsy of lower neuron type, unilateral or bilateral, speech affections and dysphagia have occurred in different combinations in different cases. Muscular tremors of a curious kind have been noted in some. In some cases the general muscular asthenia has been more marked on one side of the body than on the other—either arm alone or arm and leg.

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[1] Harris: Acute Infective Ophthalmoplegia or Botulism, Lancet, London, 1918, **1**, 568. Hall: Toxic Ophthalmoplegia, ibid., 1918, **1**, 568. Melland: Epidemic Poliomyelitis, Brit. Med. Jour., 1918, **1**, 559. Crookshank: Botulism and Heine-Medin Disease, Lancet, London, 1918, **1**, 699.

[2] Netter: Epidemic Lethargic Encephalitis, Bull. de l'Acad. de méd., 1918, **79**, 337.

Lumbar puncture has been negative bacteriologically and otherwise. Persons of all ages have been affected, but by far the majority of all cases have occurred in persons over 20 years of age. Sex and occupation seem to play no part, and in only one instance were there two cases in one family.

There has been observed congestion of the meninges and small hemorrhages in the brain substance, sometimes so large that the spinal fluid is bloody. There is cellular infiltration around the vessels and especially those in the bulbar and basal nuclei. Other parts of the brain may be involved.

In England the mortality has approached 20 per cent.; in France it was over 50 per cent., but the recovery seems to be complete in those that survived. The disease may last only a few days or it may persist for weeks or two or three months or more, the patient finally recovering when a fatal termination seemed inevitable, the sacrum, buttocks, spine and heels being covered with eschars. In fatal cases the length of the illness has varied from ten days to six weeks, and death seemed to be due to bulbar paralysis. The signs and symptoms thought to point to botulism have been vomiting, transient facial palsy, transient ptosis, absence of spinal paralysis, drowsiness and absence of fever and constipation, with dryness of the nose and mouth. Although in a considerable number of cases there was a history of the recent consumption of canned food, cheese, bacon, ham and sausages, these and other now exceptional foods had not been consumed in the majority of the cases, and no particular food has been found to be related to the outbreak. So far, no bacteriologic proof is forthcoming that any of the cases were due to bacterial infection or to intoxication by the products of bacterial activity, whether associated with food consumption or not. Against the suggestion of botulism is the fact that a case has been observed in an infant at the breast, and also that thus far *Bacillus botulinus* has not been identified.

Netter[2] insists that the disease cannot be a form of poliomyelitis, stating that this epidemic occurred during the winter and spring months, while poliomyelitis occurs almost always in the autumn; that the majority of persons affected were adults, while poliomyelitis affects mostly children, and that the spinal fluid was normal, which is not the case in poliomyelitis. In the present epidemic there were also few meningeal symptoms, and the mortality was very high —50 per cent. In poliomyelitis the meningeal symptoms are much more marked, and the mortality is much lower—about 11 per cent.

Reviewing the facts in regard to poliomyelitis, we find that epidemics very much similar to the one in question have been reported before. Hence we are probably here dealing with an epidemic of poliomyelitis, though perhaps of a rather unusual distribution in the nervous system. In regard to season, Wickman has reported an epidemic in Sweden lasting through the winter with its maximum in April and May. As to adults, there are great variations; at times the percentage is high and at other times low. An epidemic is reported by Müller, on the island of Nauru, where some 700 cases occurred, the majority of which were in adults.

In regard to the spinal fluid, it is sterile and usually clear in poliomyelitis. There is cellular increase consisting of polymorphonuclears at first and later of lymphocytes; but the cells rapidly disappear from the fluid so that after the first two weeks the count is either normal or nearly so. As to globulin, during the first week it is found in only half of the fluids, and after the third week there is a decrease. Accordingly the condition of the spinal fluid would depend on the time it was examined. At any rate, the question of whether a person may have poliomyelitis without having any changes in the spinal fluid is at present an open one.

The meningeal form of poliomyelitis is, of course, common, and at times the picture of meningitis may be so marked as actually to obscure the real nature of the disease; but there is also the atoxic or asthenic form in which there is drowsiness, stupor, etc., as in the present epidemic. Many of the reported cases, in England at least, have also shown marked meningeal symptoms. The mortality rate varies in the different epidemics of poliomyelitis. The younger children have a better chance for life than the older children and adults. In Wickman's cases the mortality was 27.6 per cent. in persons between 12 and 32 years of age. In one small epidemic he saw a mortality of 42.3 per cent. Lindner and Mally report a mortality of 50 per cent. in persons over 10 years of age. In the New York epidemic in 1916 the fatality rate was 27.2 per cent. in New York City. This tallies closely with the present epidemic in England and France. The various eye symptoms reported indicate an involvement of the third, fourth and sixth cranial nerves; the facial paralysis, involvement of the seventh; and the difficulty in swallowing and affection of the tongue, involvement of the ninth and twelfth. As a matter of fact, these cranial nerves are those most frequently involved in poliomyelitis. In the bulbar form of poliomyelitis, which means localization in the pons and medulla, the combinations of paralyses mentioned are observed.

Further investigations are in progress. From this without doubt we shall learn that this is not a new disease, but that the epidemic is one of poliomyelitis, the cerebral type being predominant, and in many respects both epidemiologically and clinically similar to the New York epidemic of 1916.

Current Comment

THE PRESENT EPIDEMIC OF INFLUENZA

The present epidemic of influenza spreads so rapidly—attacks in a new spot so suddenly—that it is difficult to discuss its incidence at the time THE JOURNAL goes to press without great fear that it will have completely changed by the date of publication. As we write it is reported that cases in the Army camps are decreasing, some 11,750 new cases having been reported in all Army camps during the twenty-four hours ending noon, October 8. New cases of pneumonia have likewise decreased, totaling some 2,181 with a mortality of 781 for the twenty-four hours. At that date the total number of cases of influenza reported from all Army camps since the disease became epidemic was placed at almost 200,000, with some 20,000 pneumonia cases and between 5,000 and 6,000 deaths in the Army alone. The civilian population has likewise suffered greatly, particular points of attack being in the New England states, in Pennsylvania and in Indiana.

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As pointed out elsewhere, the great danger is not from influenza, but from secondary complications communicated in the same manner as the influenza itself. Influenza uncomplicated by cross-infection, in the ordinary person, will run its course, and those who have it will recover. The secondary pneumonia is quite infectious and a serious complication, which up to date has occurred in some 10 per cent. of the cases and which has a mortality between 25 and 33⅓ per cent. of all the persons whom it attacks. The prevention of this pneumonia is dependent on a strict isolation of the influenza patient, not so much to protect others against the influenza, but to protect the patient against pneumonia through cross-infection.

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In some cases at least an exceedingly rapidly progressing form of pneumonia develops early in the disease, with a great deal of fluid, the lung being only partially consolidated. The patients may die with a great deal of frothy fluid in the bronchi, trachea, throat and nose, practically drowning in their own fluid. In many cases this pneumonia begins practically at the same time as the influenza itself, and it is these cases which proceed to a rapidly fatal termination. At the same time, indications are that other forms of pneumonia likewise occur. In others, the influenza is a simple uncomplicated and rather harmless disease.

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An interesting feature of the present epidemic is the change in the attitude of the public toward public health methods. The changes incident to the war have caused the public to accept freely orders and suggestions as to their mode of living. When health authorities place a ban on public gatherings, when they insist that the windows of public conveyances be kept open, when they insist on absolute quarantine in order to stop the spread of the disease, the public is ready to obey, and does obey to the fullest measure. Another feature is the confidence of the public in public health authorities, apparently the result of the intense education of the public in prophylaxis of disease which has been going on during the past decade. Orders concerning the epidemic are received without panic or alarm.

MEDICAL STUDENTS IN THE STUDENTS' ARMY TRAINING CORPS

Authority has finally been secured from the War Department for the transfer of students in the Medical Enlisted Reserve Corps to the Students' Army Training Corps, and full instructions will be issued shortly—after certain details have been arranged. This will affect students in the second, third and fourth years of the medical schools. Those enrolled as freshmen medical students are eligible for the Students' Army Training Corps in such medical schools as have established units, or any medical schools that are connected with universities having such units. This provides for uniforms, housing, board, tuition, and pay of $30 a month, the same as for other students in the Students' Army Training Corps. Premedical students likewise may enter the Students' Army Training Corps if the colleges in which they are students have units. All this, aside from students transferring from the Medical Enlisted Reserve Corps, applies only to registrants on September 12. It is expected that some provision will also be made for students who registered prior to September 12. Those in Class 1 who are not qualified for general military service are eligible for admission to the Students' Army Training Corps, and those belonging to deferred classes, if physically qualified, are eligible to enter the Students' Army Training Corps.

DEVELOPMENT FOR PHYSICALLY DISQUALIFIED STUDENTS

It is reported that between 20 and 25 per cent. of the boys examined for the Students' Army Training Corps in the universities and colleges are failing to meet the physical standards adopted for soldiers. This is due largely to underdevelopment and underweight. These boys therefore fail to gain admission to the Students' Army Training Corps; they are not entitled to wear uniforms, and remain in school as civilians. Boylike, these young fellows in civilian clothes are sensitive, and fear that they may be branded as slackers. It has been suggested that the school authorities recognize this condition and provide for some insignia to distinguish those boys disqualified for physical reasons from those who have made no attempt to qualify. While we do not believe in grownups wearing a badge as a proof of their patriotism, there may be some reason for the wearing of such a badge in these schools. But we suggest that instead of supplying these boys with badges, the school authorities recognize the splendid opportunity and institute a plan for developing these boys so that they may become physically fit to wear the uniform. The ideal thing would be for the individual schools to form Development Corps of those physically disqualified and put them in a uniform adopted by the school itself. This would be a stimulus for the boys to cooperate with the University in attaining physical fitness and promotion to the Students' Army Training Corps.

Medical Mobilization and the War

Appointment in the Medical Reserve Corps and Acceptance of Commission

The important decisions relative to appointment in the Medical Reserve Corps have just been promulgated by the Surgeon-General's Office:

(*a*) Graduates of 1918 will be required to serve one year's internship in a civil hospital before being considered eligible for a commission.

(*b*) No more appointments are being made in the Medical Reserve Corps. All commissions issued are in the United States Army. There is no inactive status in the United States Army, consequently the order to active duty invariably accompanies notices of appointment from the Adjutant - General's Office. The newly appointed officers are given fifteen days in which to comply with the Adjutant - General's orders. A failure to comply or to accept a commission within the specified time will be considered by the Adjutant-General as a declination of commission. The appointment will be cancelled and if the applicant wishes a new appointment it will be necessary for him to be reexamined as for an original appointment.

Surgeon-General Merritte W. Ireland

Physicians Needed by Public Health Service

We again call attention to the fact that the United States Public Health Service is in need of physicians to assist it in carrying out its enlarged work in connection with the health conditions in extracantonment and camp zones. This offers an opportunity for those physicians who want to do war work, and who can not, or do not want to, obtain a commission in the Medical Corps of the Army or Navy. Physicians desiring to help in this work should write to the Surgeon-General of the Public Health Service, Washington, D. C. The Journal is prepared to supply forms on which to make formal application. These forms are for the purpose of indicating the applicant's qualifications, and to show in what way he can be best used—whether in a hospital or in public health and sanitary work. The pay is from $2,000 to $2,500 a year. If quarters and subsidence are furnished, the pay is $1,800 a year. No physical examinations are required other than to ascertain whether the physician is able to perform the duty for which he desires to be appointed. These appointments are as acting assistant surgeons since at this time there is *no* provision for commissions. No examinations are required to qualify. The appointment does not exempt one from the Selective Service Law.

SURGEON-GENERAL MERRITTE W. IRELAND

On October 3 the President sent to the Senate the following nomination: "To be Surgeon-General with the rank of Major-General: Major-General Merritte W. Ireland, M. C., U. S. Army." It may be taken for granted that this nomination will be confirmed by the Senate. The appointment of General Ireland to this position will give general satisfaction to the Medical Department of the Army. The record of General Ireland in the Medical Department is a record of thorough, conscientious service fitting him particularly for the position which he now is to occupy.

He was born at Columbia City, Ind., May 31, 1867, was graduated from the Detroit College of Medicine in 1890, and followed his graduation with an internship in St. Mary's Hospital, Detroit, from 1889 to 1890; was graduated from Jefferson Medical College, Philadelphia, in 1891, immediately afterward entering the service as first lieutenant and assistant surgeon on May 4, 1891. He began his military career at Jefferson Barracks, Mo., on May 27, 1891, on May 4, 1896, he was made captain and assistant surgeon. In the Spanish-American War he served with the Fifth Army Corps in Cuba and later at Camp Wyckoff, N. Y., on April 17, 1899, becoming surgeon with the rank of major of the 45th United States Infantry. At this time he went with his command to the Philippine Islands, serving in several campaigns and being officially commended by the chief surgeon. In April, 1900, he took charge of the medical supply depot of the Division of the Philippines at Manila, and was honorably discharged from volunteer service, June 30, 1900. In 1902 he entered the Surgeon-General's Office, working under Surgeon-General O'Reilly and continuing under Surgeon-General Torney. He was promoted to major and surgeon and to major, M. C., Aug. 3, 1903, and to lieutenant-colonel, May 1, 1911. He left the office of the Surgeon-General in 1912, again going to the Philippines, where he was stationed as post surgeon at Fort William McKinley. He thus had a continuous service in the Surgeon-General's Office of approximately ten years. He returned to the United States and was placed in charge of the base hospital at Fort Sam Houston in 1916, and accompanied General Pershing to Mexico as surgeon of the American Expeditionary Forces to Mexico. When the United States entered the great war he accompanied General Pershing to France as chief surgeon of the American Expeditionary Forces, was promoted to the rank of brigadier-general, May 1, 1918, and more recently to the rank of major-general and Surgeon-General of the expeditionary forces.

Our new Surgeon-General is, therefore, fitted especially to conduct the medical service of the Army through the remainder of the war, as well as in times of peace. He has filled practically every position to which the men who will serve under him may be called—surgeon of volunteers, post surgeon, assistant in the Surgeon-General's Office, supply depot, surgeon-general of the expeditionary forces—a complete record which indicates that the chief will know what confronts each of his subordinates.

BRIGADIER-GENERAL NOBLE TO BE SURGEON-GENERAL FOR EXPEDITIONARY FORCES

Included with the nominations sent to the Senate by the President, October 3, was the appointment of Brig.-Gen. Robert E. Noble to take the place vacated by General Ireland as Surgeon-General for the American Expeditionary Forces.

Major-General Robert E. Noble

General Noble was born in Georgia in 1870. He was educated in the Polytechnic Institute of Alabama, receiving his B.S. degree in 1890 and the M.S. in 1891 and was graduated in medicine by Columbia University in 1899. He was appointed assistant surgeon in 1901, and was an honor graduate of the Army Medical School in 1904, then was appointed captain and assistant surgeon in the Medical Corps, June, 1906, and major in January, 1910. From 1907 to 1914 he served with General Gorgas in the Canal Zone and was efficient in helping to secure the wonderful sanitary results which made the building of the Panama Canal possible. When General Gorgas was made Surgeon-General, Major Noble accompanied him to the Surgeon-General's Office, taking over the personnel department. As chief of the personnel division he was instrumental in building up the large personnel of the Medical Reserve Corps which today constitutes the large majority of the commissioned portion of our Medical Department. Later, in addition to his other duties, he was called to assume the duties of director of hospitals on this side of the Atlantic, and at the time of his present appointment was engaged in completing arrangements for the care of the sick and wounded who are to be returned from Europe, or who may need hospital care in the United States. This is the fundamental work in the Department of Reconstruction and Rehabilitation.

General Noble has had a wide experience in sanitation, and as assistant Surgeon-General is thoroughly acquainted with the administrative work of the Surgeon-General's Office which will be helpful in his new position. In every respect he is well qualified for the new functions and responsibilities he will assume in France as head of the Medical Division of our Expeditionary Forces.

Promotions of Medical Officers

Recent records carry the following promotions: Major-Gen. Merritte W. Ireland (Colonel, M. C.), now holding the emergency rank of Major-General, to be Major-General and Surgeon-General; Brigadier-Gen. Robert E. Noble (Lieutenant-Colonel, M. C.), now holding the emergency rank of Brigadier-General, to be Major-General for the period of the present emergency, for service abroad, succeeding Major-General Ireland as first assistant Surgeon-General; Col. Edward L. Munson to be Brigadier-General for the period of the emergency; Cols. James D. Glennan, William S. Thayer and John M. T. Finney to be Brigadier-Generals, M. C. Lieutenant-colonels, M. C., to colonels, M. C. (emergency), Sept. 4, 1918: E. F. Geddings, Fort Adams, R. I.; G. McD. Van Poole, Honolulu, T. H.; J. F. Hall, Plattsburg Barracks, N. Y.; L. M. Hathaway, Fort Baker, Calif.; A. M. Whaley, Washington, D. C. Majors, M. C., to lieutenant-colonels, M. C. (emergency), Sept. 6, 1918: H. C. Coe, New York; J. B. Carnett, Philadelphia; E. S. Kilgore, San Francisco; A. W. Elting, Albany, N. Y.; W. D. Webb, Washington, D. C.; J. B. Walker, New York; D. D. Lewis, Chicago; E. H. Fiske, Brooklyn; W. M. L. Coplin, Philadelphia; C. L. Chase, Chickamauga, Ga.; S. C. Gurney, Detroit; V. P. Blair, St. Louis; A. Greenwood, Boston. Sept. 7, 1918: J. W. Amesse, Denver; A. E. Cohn, New York; J. J. Dowling, Boston; W. Gillespie, Cincinnati; S. McGuire, Richmond, Va.; G. B. Webb, Colorado Springs, Colo.; W. F. Wesselhoeft, Boston.

Promotions in Medical Corps of the Navy

The following promotions in the Medical Corps of the Navy are announced: As rear admirals, U. S. Navy, medical directors Albert M. D. McCormick and Robert Morris Kennedy; as permanent captains, Surgs. Charles E. Riggs, Ammen Farenholt, Middleton S. Elliott, Frank L. Pleadwell, Dudley N. Carpenter, James C. Pryor and Washington B. Grove; as temporary captains, Surgs. Raymond Spear, John B. Dennis, Eugene J. Grow, Frank E. McCullough, Granville L. Angeny, William H. Bell, Holton C. Curl, Edward G. Parker, Henry E. O'Dell, James S. Taylor, Joseph A. Murphy, Charles E. Freeman, Charles St. J. Butler and John M. Brister.

Appointment in War Risk Bureau

Dr. Edson W. Glidden, 2d, has been appointed assistant medical director of the War Risk Insurance Bureau, Medical Department, in charge of the tuberculosis department. This will interest those who realize how many tuberculous ex-soldiers and sailors are cared for by this bureau. Dr. Glidden was for several years assistant superintendent of the Lakeville Tuberculosis Sanatorium, Middleboro, Mass.

For Addition to the Hygienic Laboratory

A bill is under consideration in Congress for an appropriation of $250,000 to build a much needed addition to the Hygienic Laboratory of the Public Health Service in Washington, D. C., and in the House, a special rule has been brought in making this bill a special order.

COMMISSIONS ACCEPTED, MEDICAL CORPS, U. S. ARMY

Previous lists published in The Journal, June 1, 22 and 29, July 13, 20 and 27, August 3, 10, 17, 24 and 31, September 7, 14, 21 and 28 and October 5.

ALABAMA

Birmingham—Edmondson, J. H.
Weed, W. A.
Downs—Sankey, J. M.

ARKANSAS

Banks—Smith, S. E.
Drakes Creek—Hill, N. J.
Greenbrier—Henderson, G. L.
Hoxie—Stidham, J. H.
Little Rock—Judkins, W. D.
Warren—Martin, R.

CALIFORNIA

Banning—Coffman, H. L.
Burlingame—Burnham, M. P.
Eagle Rock—Dirks, C. B.
Fillmore—Osborn, H. B.
Lindsay—Tourtillott, W. W.
Los Angeles—Fellows, A.
Mann, H. H.
Oakland—Pomeroy, G. T.
San Francisco—Kinslow, F. A.
Spiro, H.
Waste, J. M.
Sherman—Perry, J. R.
Venice—Sands, R. A.

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DISTRICT OF COLUMBIA

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ILLINOIS

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Kretschmer, H. L.
Levett, J.
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Moline—Wahlberg, K. W.
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[illegible] C. M.
[illegible] T.
[illegible] H.

INDIANA

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McCool, J. F.
Reynolds, D. M.
Wheeler, H. H., Sr.
Linton—Custer, A. T.
[illegible] W.
[illegible] C. C.
[illegible] W. V.
Redkey—Markley, H. W.
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Waynetown—Roark, C. A.

IOWA

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Wichita—Seydell, E. M.

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Gribble, B. G.
Morris, C. D.
Paducah—Shemwell, A. H.
Summer Shade—Wells, G. M.

LOUISIANA

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MARYLAND

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Purvis, J. O.
Baltimore—Crook, C. S.
Parker, L. M. C.
Savage—Shipley, F. E.

MASSACHUSETTS

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Concord—Bartlett, W. B.
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Pittsfield—Bard, H. H.
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Radding, M. B.
Rice, A. G.
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Waseca—Guyer, L. G.

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Thomastown—O'Cain, E. C.

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Tilles, R. S.
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Princeton—Tenbroeck, C.

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Doyle, G. J.
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Gissel, H. W.
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Siulzinski, M. R.
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Mixsell, H. R.
Roberts, P. W.
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Tenner, A. S.
Norwich—McNitt, H. W.
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Searles, W. I.
Summer, C.
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Syracuse—Potter, C. F.
White Plains—Parker, J. S.
Yonkers—Trotter, J. P.

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Raleigh—Knox, A. W.

OHIO

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Quincy—Curl, A. M.
Spencerville—Baxter, I. D.
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Toledo—Sinkey, R. E.
Smead, L. F.
Vetter, E. F.
Youngstown—Ranz, W. E.
Ryall, W. W.

OKLAHOMA

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Hugo—Wolfe, R.
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Kusa—Thompson, W. A.
Muskogee—Vitum, J. S.
Oklahoma—Burns, T. C.
Shawnee—Scott, J. H.
Tulsa—Woody, W. W.

PENNSYLVANIA

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Silverman, A.
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Crozier, A. W.
Cruikshant, O. T.
Jahn, A. H.
Tucker, G. F.

RHODE ISLAND

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SOUTH CAROLINA

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SOUTH DAKOTA

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Dyer—Jackson, J.
Medling, W. L.
Nashville—Sharp, W. B.

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El Paso—Irvin, E. H.
Iredell—Turner, G.
New Braunfels—Hagler, M. C.
Port Arthur—Crumpler, W. E.
Post—Castleberry, G. G.
San Angelo—Kight, J. R.
San Antonio—Ross, R. R.
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UTAH

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Nephi—Rees, N. J.

VERMONT

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Lindsay, W.
[illegible] W. M.
[illegible]
[illegible]—Goss, R. J.

VIRGINIA

Mathews—Hoskins, R. R.
Richmond—Coleman, C. C.
Roanoke—Saunders, W. H.
Staunton—Thomas, G. H.

WASHINGTON

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Seattle—McDowell, A. E.
Toppenish—Rowland, S. I.

WEST VIRGINIA

Reedy—Gordon, A. T.
Spencer—Staats, H. H.

WISCONSIN

Green Bay—DePierre, A.

WYOMING

Sunrise—Lowe, W.

COMMISSIONS ACCEPTED, U. S. NAVAL RESERVE FORCE

Previous lists published in The Journal, June 29, July 13, 20 and 27, August 3, 10 and 31 and September 7, 14 and 28.

ALABAMA

Montgomery—McGehee, W. W.
Mertins, P. S.

CALIFORNIA

Holtville—Mosher, W. F.
Los Angeles—Snure, H.
Williams, P. M.
San Francisco—Bohm, J. E.
Harrison, W. H.

COLORADO

Denver—Shea, R. M.

CONNECTICUT

Derby—Treat, W. H.
New Haven—Hoegen, J. A., Jr.
Torrington—Woodhouse, L. W.

GEORGIA

Atlanta—Ballenger, W. L.
Savannah—McDowell, I. W.

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Sioux City—Bellaire, R. F.

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Rosedale—Whitney, E. L.

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MAINE

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MICHIGAN

Engadine—Reese, J. A.
Jackson—Farmer, V. D.

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St. Louis—North, E. P.

MONTANA

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Trenton—Kent, M. M.

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Albany—Branan, J. H.
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Jamaica—Chasick, J. M.
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Klein, E.
Pike, H.
Schwartz, A.
Smith, J. M.
Van Fleet, J. F.
Norwich—Jennings, W. B.
Syracuse—McGuire, R. J.
Weinheimer, L. H.

NORTH CAROLINA

Concord—Patterson, J. A.
Lumberton—Martin, J. A.

OHIO

Kenton—Wynn, H. R.

PENNSYLVANIA

Farrell—Kelly, R. A.
Philadelphia—Keegan, A. P.
Smith, F. W.
Pittsburgh—Billings, F. T.
Boggs, R. H.
Moyer, R. P.
Weiss, E. A.

TENNESSEE

Chattanooga—Watson, R. B.

TEXAS

Marfa—Darracott, J. C.

VIRGINIA

Richmond—Bowles, J. P.

WASHINGTON

North Seattle—Buschmann, T. W.
North Yakima—Cooper, P. B.
Seattle—Griswold, W. S.
Hopkins, R. T.

COMMISSIONS OFFERED AND ORDERS TO DUTY ON ACCEPTANCE

Alabama

To Camp Sheridan, Ala., Capt. J. E. GARRISON, Birmingham; Lieuts. F. W. HARRIS, Birmingham; L. C. DAVIS, Gordo; H. W. HOWELL, Hamilton; E. E. TAYLOR, Silas.

To Fort Oglethorpe for instruction, Capts. E. T. FIELDS, Ensley; A. W. RALLS, Gadsden; V. H. WILLIAMS, Jasper; Lieut. W. H. BOOZER, Sylacauga.

To Washington, D. C., St. Elizabeth's Hospital, Major G. H. SEARCY, Tuscaloosa.

Arizona

To Camp Cody, N. M., base hospital, Lieut. C. W. ADAMS, Globe.

To Camp Kearney, Calif., Lieut. J. W. BAZELL, Holbrook.

To Camp Logan, Texas, base hospital, for instruction, Capt. N. C. BLEDSOE, Bisbee.

Arkansas

To Camp Beauregard, La., Lieut. E. B. BROWN, Cotton Plant.

To Camp Logan, Texas, Capt. J. E. CASHIN, Dierks.

To Fort Oglethorpe for instruction, Capt. W. L. SHIREY, Foreman; Lieuts, A. C. KOLB, Hope; W. L. SNIDER, J. B. STRACHAM, Hot Springs.

To Fort Riley for instruction, Lieuts. T. A. CLIFTON, Hot Springs; R. L. FRASER, McCrary; S. M. GATES, Monticello; E. B. SWINDLER, Stuttgart.

California

To Camp Cody, N. M., base hospital, Lieut. L. M. ROSE, *Santa Clara.*

To Camp Fremont, Calif., Lieut. T. F. MADDEN, Sanger. Base hospital, Capts. H. A. HUNTOON, Los Angeles; J. A. NELSON, P. RICE, San Francisco. Base hospital, for instruction, Lieuts. E. R. HANLON, O. F. SCHULLIAN, Los Angeles.

To Camp Kearney, Calif., Capts. L. J. ROTH, Los Angeles; J. C. SILLIMAN, Palo Alto; L. D. GREEN, San Francisco; W. E. SMITH, Whittier; Lieuts. C. C. WAGGONER, Los Angeles; E. M. CLARK, Oakland; J. B. LUCKIE, Pasadena; E. E. EWING, H. R. KING, San Francisco. Base hospital, Capts. E. S. DEPUY, T. REA, Oakland; Lieuts, H. R. BECK, Los Angeles; A. A. ALEXANDER, Oakland; L. D. RIGGS, San Diego. Base hospital, for instruction, Major T. E. BAILEY, San Francisco; Capts. W. F. HOLMAN, Los Angeles; G. H. LILIENCRANTZ, J. H. SAMPSON, Oakland; Lieuts. G. T. MOUNTFORD, *Coalinga; H. D. BARNARD,* Sacramento.

To Camp Lewis, Wash., Capts. F. R. DeLAPPE, Modesto; S. E. SIMMONS, Sacramento.

To Fort Oglethorpe for instruction, Lieuts. G. P. LATON, Los Angeles; H. A. TODD, Porterville.

To San Francisco, Calif., Letterman General Hospital, Capts. W. T. CLARKE, Los Angeles; D. A. CONRAD, Santa Barbara.

The following order has been revoked: *To Camp Kearney, Calif.,* as assistant to camp surgeon, Capt. C. F. METCALF, South Pasadena.

Colorado

To Azalea, N. C., Lieut. W. V. MULLIN, Colorado Springs.

To Camp Cody, N. M., for instruction, Lieut. T. A. DAVIS, Portland.

To Camp Pike, Ark., base hospital, Capt. J. T. ELLIOTT, Denver.

To Fort Des Moines, Iowa, base hospital, Lieut. S. S. GOLDHAMMER, Denver.

To Fort Oglethorpe for instruction, Capt. F. P. GENGENBACH, Denver.

To Fort Riley, Capt. F. L. WASHBURN, Telluride. For instruction, Capt. T. A. TRIPLETT, Denver; Lieuts. G. F. EWING, Julesburg; A. R. WILLIAMSON, Pueblo. Base hospital, for instruction, Lieut. R. L. CHARLES, Denver.

Connecticut

To Fort Oglethorpe for instruction, Capt. F. F. SIMONTON, Thompsonville.

To Morrison, Va., Lieut. T. A. O'BRIEN, New Haven.

To New Haven, Conn., Yale Army Laboratory School, for instruction, Capt. R. E. BLACK, New London.

District of Columbia

To Camp Lee, Va., Lieut. W. A. MESS, Washington.

To New Haven, Conn., Yale Army Laboratory School, for instruction, Capt. A. M. MacNAMEE, Washington.

Florida

To Camp Joseph E. Johnston, Fla., Capts. B. H. MAYNARD, Lakeland; S. B. STRONG, Palatka; Lieuts. F. A. COPP, Middleburg; J. E. GARNER, Wauchula.

To Camp Sheridan, Ala., base hospital, Capt. R. B. MacFEETERS, Jacksonville.

To Camp Wheeler, Ga., for instruction, Capt. F. J. WAAS, Jacksonville.

Georgia

To Camp Gordon, Ga., base hospital, Capt. R. G. McALILEY, Atlanta.

To Camp Joseph E. Johnston, Fla., Lieuts. P. L. NEVIL, Claxton; T. S. USSERY, Decatur; W. L. ORR, Riverdale.

To Camp Meade, Md., Lieut. W. W. MASSEY, Moultrie.

To Camp Sheridan, Ala., Lieut. S. M. COPELAND, Surrency.

To Fort McPherson, Ga., Lieut. G. L. ECHOLS, Milledgeville.

To Fort Oglethorpe for instruction, Major C. V. WOOD, Cedartown; Capts. J. T. FLOYD, Atlanta; S. D. BROWN, Royston; Lieuts. J. T. STUKES, Americus; J. E. G. GREER, Chattahoochee; J. A. GREEN, Clayton; B. DANIEL, Cordele; C. H. WALKER, Macon; W. H. SUTTON, Midville; E. W. CROCKETT, Sylvester.

Idaho

To Camp Dodge, Iowa, base hospital, for instruction, Lieut. E. W. FOX, Arco.

To Camp Fremont, Calif., base hospital, Lieut. F. A. IRMEN, Buhl.

To Fort Riley for instruction, Capt. J. L. KELLY, Nezperce; Lieut. G. G. ESPE, Rexburg.

Illinois

To Ann Arbor, Mich., State Psychopathic Hospital, Capts. E. BOWE, Jacksonville; O. O. STANLEY, Urbana.

To Camp Custer, Mich., base hospital, Capt. T. W. FLOYD, Peoria.

To Camp Grant, Ill., Lieut. L. GLASSMAN, Chicago. Base hospital, Capts. G. S. DUNTLEY, Bushnell; G. T. JORDAN, Chicago; C. E. MAYOS, East Moline. Base hospital, for instruction, Lieut. R. G. SAVAGE, Oak Park. *To examine the command* for nervous and mental diseases, Lieut. W. G. MURRAY, Jacksonville.

To Camp Meade, Md., Capt. J. C. FURLONG, Spring Grove.

To Camp Pike, Ark., base hospital, for instruction, Lieut. J. T. O'NEILL, Joliet.

To Camp Sevier, S. C., Lieut. M. H. WILKINSON, Dwight.

To Camp Sherman, Ohio, Capt. E. W. BROOKS, Beecher City.

To Camp Wadsworth, S. C., base hospital, Capt. W. W. MELOY, Chicago.

To Camp Zachary Taylor, Ky., base hospital, for instruction, Lieut. L. J. MAY, Anna.

To Fort Oglethorpe for instruction, Capts. W. H. GALLAND, J. M. GRIFFIN, J. MYERS, Chicago; T. A. BRYAN, Mattoon; R. W. OAKLEY, Moline; Lieuts. G. W. WESTERMEIER, Carlinville; H. A. SHAFFER, Charleston; J. A. ABELL, F. L. ANDREWS, V. I. ARMEN, M. J. BADZMIEREWSKI, F. A. LAGORIO, A. E. LEHNER, J. J. McCARTY, Jr., E. F. SLAVIK, J. B. SONNENSCHEIN, L. L. WALLS, W. WILLIAMS, Chicago; W. F. HAGER, Effingham; G. B. BORMANN, Waukegan.

To Fort R[illegible] Capts. S. P. HART, Auburn; R. E. GRAVES, C[illegible] Iuka; A. M. KING, Jacksonville; W. H. PERI[illegible] P. K. ANDREWS, Ashmore; L. J. HENSLER, [illegible] L, Cherry Valley; W. N. GOONE, F. C. HANMORE, J. F. KUCERA, W. M. THOMPSON, Chicago; T. E. CARNEAL, Iuka; J. E. GOODMAN, Pleasant Hill; H. A. CUNNINGHAM, Salem; L. E. HARTWICK, Seymour; W. J. REAM, Spring Valley; C. H. DOWSETT, Woodland; C. S. CAMPBELL, Xenia.

To New Haven, Conn., Capt. G. W. WAGNER, Lieut. R. G. PESCHMAN, Chicago. Yale Army Laboratory School, for instruction, Lieut. L. J. TINT, Chicago.

Indiana

To Camp Dodge, Iowa, base hospital, Capt. W. F. HOWAT, Hammond.

To Camp Grant, Ill., base hospital, Capt. C. BOARDMAN, Gary.

To Camp Jackson, S. C., base hospital, for instruction, Lieut. C. E. COX, Indianapolis.

To Camp Sherman, Ohio, base hospital, Capt. O. E. McWILLIAMS, Anderson; J. R. GILLUM, Terre Haute.

To Fort Des Moines, Iowa, base hospital, Capt. L. Z. BREAKS, Terre Haute.

To Fort Oglethorpe for instruction, Capts. E. A. BROWN, E. F. KISER, Indianapolis; C. S. HOUGLAND, Milroy; F. E. WOLFE, *New Albany; F. H. GREEN,* Rushville; Lieuts. H. P. LONG, Dillsboro; C. J. ROTHSCHILD, Fort Wayne; H. W. COX, Indianapolis; C. E. JUMPER, Terre Haute.

To Fort Riley for instruction, Capt. C. W. ASBURY, Hymera; Lieuts. A. C. CHENOWETH, *Andrews;* F. M. BIDDLE, Battle Ground; J. B. MOSER, Bloomington; W. D. BRETZ, Huntingburg; R. J. D. PETERS, Indianapolis; T. M. SMITH, Marysville; R. O. KENNEDY, Milroy; H. M. CROWE, South Bend.

To New Haven, Conn., Lieut. C. J. STEVENS, Rockville.

To Washington, D. C., Surgeon-General's Office, Capt. C. ROGERS, Indianapolis.

Iowa

To Camp Pike, Ark., for instruction, Lieut. C. C. LYTLE, Lansing.

To Fort Oglethorpe for instruction, Capts. H. A. WHITE, Clinton; W. A. DUNLAP, R. R. MORDEN, Des Moines; Lieuts. P. A. PARK, Atkins; T. A. BURKE, Mason City.

To Fort Riley, Capt. R. H. GREGORY, Creston. For instruction, Capts. G. T. McDOWELL, Gladbrook; F. F. EBERSCLE, Mount Vernon; Lieuts. C. S. HICKMAN, Centerville; R. W. PRATHER, Des Moines; G. E. SNEARLY, Goodell; J. R. *BLACK,* Jefferson; G. G. GIBSON, Lehigh; G. S. WESTLY, Manly; B. B. EVERALL, Monona; M. O. STAUCH, Whiting.

Kansas

To Camp Beauregard, La., base hospital, for instruction, Capt. *G. F.* ZERZAN, Holyrood.

To Camp Bowie, Texas, base hospital, for instruction, Capt. R. R. NEVITT, Mildred.

To Camp Cody, N. M., base hospital, Capt. J. W. SIMMONS, Salina.

To Camp Pike, Ark., base hospital, for instruction, Lieut. G. A. KING, Maplehill.

To Fort Oglethorpe for instruction, Lieuts. A. J. WEDEL, Hesston; C. MAYFIELD, Hutchinson; C. C. FUNK, Smith Center.

To Fort Riley, base hospital, Lieut. W. P. CALAHAN, Wichita. For instruction, Capts. C. A. FISHER, Fontana; C. F. McNAIR, Haven; E. L. ASBELL, Kansas City; J. S. FULTON, Kiowa; E. LIEURANCE, Neosha Falls; Lieuts. H. RICHERT, Goessel; P. F. WESLEY, Haviland; P. C. ANDERS, Hays; W. E. MICHENER, Ottawa; O. C. LOWE, Paola; L. S. FISHER, Raymond; G. H. GRIEVE, Turon.

To New Haven, Conn., Yale Army Laboratory School, for instruction, Capt. H. N. MOSES, Salina.

Kentucky

To Camp Greene, N. C., Capt. L. S. SILER, Woodbine.

To Camp Hancock, Ga., base hospital, for instruction, Capt. J. R. COWAN, Danville.

To Camp Jackson, S. C., Capt. J. I. SMITH, London; Lieut. C. L. HANCOCK, Smithfield.

To Camp Shelby, Miss., base hospital, for instruction, Lieut. J. F. MORGAN, Cynthiana.

To Camp Sherman, Ohio, base hospital, for instruction, Lieut H. TYLDESLEY, Central City.

To Camp Zachary Tayor, base hospital, Capt. J. W. SCOTT, Lexington; Lieut. W. D. LEVI, Louisville.

To Fort Oglethorpe for instruction, Capts. W. M. RUSH, Buechel; E. T. GRASSER, Louisville; S. S. FOSS, Valley Station; Lieuts. D. R. BOTKIN, Hazard; T. J. CRICE, H. G. HARTMAN, H. M. RUBEL, Louisville; C. H. JONES, Lynn Grove; J. R. McGARY, Owensboro.

To Fort Riley for instruction, Capt. C. C. ENGLISH, Lieut. W. H. EMRICH, Louisville.

Louisiana

To Camp Beauregard, La., Lieut. L. T. LANE, Reids.

To Camp Joseph E. Johnston, Fla., Lieut. J. W. PHILLIPS, Boyce.

To Camp Shelby, Miss., base hospital, Lieut. E. A. HOGAN, New Orleans.

To Camp Sheridan, Ala., Lieut. W. L. LITTON, Belmont.

Maine

To Camp Devens, Mass., base hospital, Capt. F. Y. GILBERT, Portland.

To Camp Greene, N. C., Lieut. C. F. TRAYNOR, Biddeford.

To Camp Jackson, S. C., Lieut. J. G. HUTCHINS, Camden.

To Fort Oglethorpe for instruction, Capt. H. W. SAMPSON, Monson; Lieuts. I. B. GAGE, Atlantic; L. O. ROY, Lewiston.

Maryland

To Camp Jackson, S. C., base hospital, Capt. T. P. SPRUNT, Baltimore.

To Camp Meade, Md., Lieut. G. S. M. KIEFFER, Baltimore. Base hospital, for instruction, Capt. J. R. B. BRANCH, Baltimore.

To Camp Sevier, S. C., Capt. I. J. SPEAR, Baltimore.

To Fort Oglethorpe for instruction, Lieuts. R. Z. G. CROSS, R. W. EBE, M. L. RAEMORE, A. L. RETTALIATA, F. C. WARRING, Baltimore; H. C. HESS, Govans.

To New Haven, Conn., Lieut E. J. LEOPOLD, Baltimore.

Massachusetts

To Camp Devens, Mass., Lieut. H. L. McDONALD, Attleboro. Base hospital, for instruction, Capt. W. S. BUCKLEY, Boston.

To Camp Dix, N. J., base hospital, Capt. W. H. McMANN, Boston.

To Camp Greene, N. C., Capt. D. F. MacDONALD, Taunton.

To Camp Jackson, S. C., base hospital, Major G. S. C. BADGER, Boston; Capt. C. E. STREET, Springfield.

To Camp Lee, Va., Capt. E. V. HARTWICK, Dorchester.

To Camp Meade, Md., Lieut. A. W. BERR, Lawrence.

To Camp Sevier, S. C., Lieut. D. J. ELLISON, Lowell.

To Camp Wadsworth, S. C., Lieuts. R. R. ROOT, Georgetown; W. L. QUENNELL, Tewksbury.

To Fort Oglethorpe for instruction, Capts. G. M. MASON, Boston; T. E. CAVANAUGH, Holyoke; W. L. HOARN, Lynn; R. W. GUILER, Newton; F. R. CLARK, Newtonville; E. J. DAILEY, Somerville; J. N. BOYER, E. C. SULLIVAN, E. J. SWEENEY, Springfield; Lieuts. E. W. SMALL, Belmont; E. R. GOOKIN, E. D. HARTNETT, J. H. ROOT, R. F. SHELDON, Boston; H. B. DUNHAM, Brockton; A. W. SLATE, Indian Orchard; W. F. DOLAN, Quincy; G. V. HIGGINS, Randolph; H. C. GERRARD, Springfield; O. S. MAYHEW, Vineyard Haven; P. A. DEVANEY, Waverly; C. BAKER, Worcester.

To New Haven, Conn., Capt. J. P. TREANOR, Boston; Lieut. R. MORGAN, Westfield.

To Plattsburg Barracks, N. Y., Capt. B. T. BURLEY, Worcester.

To Walter Reed General Hospital, D. C., Capt. F. A. BARDWELL, Boston.

Michigan

To Camp Jackson, S. C., Lieut. C. R. W. SOUTHWICK, Partello.

To Fort Oglethorpe for instruction, Capts. O. WHITNEY, Adrian; P. B. TAYLOR, C. A. WOODRUFF, Detroit; W. H. ENDERS, Jackson; Lieuts. L. P. SCHROEDER, Calumet; F. E. REEDER, Flint.

To Fort Riley for instruction, Lieuts. F. W. GOTTSCHALK, Detroit; B. R. SLEEMAN, Linden.

Minnesota

To Camp Dodge, Iowa, base hospital, Capts. G. F. BROOKS, Hibbing; C. D. FREEMAN, St. Paul. Base hospital, for instruction, Lieut. C. A. TRAEGER, Faribault.

To Camp Pike, Ark., base hospital, for instruction, Lieut. S. V. HODGE, Minneapolis.

To Fort Oglethorpe for instruction, Lieuts. A. H. SCHWARTZ, Duluth; W. M. EMPIE, Virginia.

To Fort Riley for instruction, Lieuts. H. O. RUDD, Fosston; J. D. WATSON, Holdingford; F. L. HAMMERSTRAND, Sacred Heart; M. L. LARSON, W. R. McCARTHY, C. WOOLSON, St. Paul.

Mississippi

To Camp Beauregard, La., Lieut. J. J. WILSON, Coldwater.

To Camp Joseph E. Johnston, Fla., Lieut. R. N. S. YOUNG, Brooklyn.

To Camp Sheridan, Ala., Capt. J. D. SMITH, Laurel; Lieut. G. W. BOUNDS, Meehan Junction.

To Fort McPherson, Ga., Capt. W. W. SMITHSON, Jackson; Lieuts. S. J. GADDY, Sumrall; G. C. HARALSON, Vicksburg.

To Fort Oglethorpe for instruction, Capt. V. A. LEA, Gloster; Lieut. L. B. HUDSON, Hattiesburg.

Missouri

To Camp Doniphan, Okla., Lieut. E. P. MONAHAN, Kansas City.

To Camp Lee, Va., base hospital, Lieut. J. A. PRINGLE, St. Louis.

To Camp Logan, Texas, Lieut. R. M. WINN, Hannibal.

To Camp MacArthur, Texas, Lieut. J. W. WINN, Higbee.

To Camp Pike, Ark., base hospital, Lieut. V. W. McCARTY, Kansas City. Base hospital for instruction, Lieut. M. PITZMAN, St. Louis.

To Des Moines, Iowa, base hospital, Lieut. E. E. HEIN, St. Louis.

To Fort Oglethorpe for instruction, Capts. O. W. BUTLER, H. B. DAVIS, F. J. HATCH, T. T. SAWYER, Kansas City; E. W. STACY, Princeton; C. A. GOOD, J. M. DOYLE, St. Joseph; Lieuts. R. CALLAGHAN, J. E. RAY, Kansas City; J. C. FLEISCHMAN, St. Louis.

To Fort Riley, Capt. A. C. KIMBALL, St. Louis; Lieuts. G. W. HORROM, Rolla; R. T. MULFORD, St. Louis. For instruction, Capts. J. F. MacKEY, Kansas city; C. S. BLACKMAN, Parma; C. H. WERNER, St. Joseph; Lieuts. F. H. EMMONS, Auxvasse; S. L. DURHAM, Dearborn; O. R. CROOKS, C. G. PARMENTER, E. L. RUBLE, C. A. SHERMAN, Kansas City; C. H. BULKLEY, La Plata; M. W. ROGERS, Princeton; G. R. STEVENSON, St. Joseph; S. J. KING, R. TURNER, St. Louis.

To New Haven, Conn., Yale Army Laboratory School, for instruction, Major D. L. HARRIS, St. Louis; Lieut. J. D. JACKSON, Kansas City.

To report to the commanding officer, Central Department, Capt. R. L. MOUNT, Polo.

Montana

To Camp Dodge, Iowa, base hospital, for instruction, Capt. G. L. CHAPMAN, Great Falls.

To Fort Oglethorpe for instruction, Capt. S. E. SCHWARTZ, Butte.

Nebraska

To Camp Dodge, Iowa, base hospital, Capt. H. B. LANDIS, Broken Bow. Base hospital, for instruction, Lieut. H. P. WEKESSER, Lincoln.

To Camp Logan, Texas, base hospital, Capt. J. B. McPHERSON, Hastings.

To Camp Pike, Ark., for instruction, Capt. G. E. WILLIAMS, Havelock.

To Denver, Colo., Capt. L. R. JONES, Scotts Bluff.

To Fort Oglethorpe for instruction, Capts. W. H. HEINE, Hooper; F. A. LEMAR, Humphrey; Lieut. R. L. SMITH, Lincoln.

To Fort Riley for instruction, Lieuts. A. A. TYRRELL, Beatrice; R. F. DECKER, Byron; G. A. DES JARDIN, Lincoln.

Nevada

To Camp Pike, Ark., for instruction, Capt. F. C. PACHE, Mina.

New Hampshire

To Camp Jackson, S. C., Lieut. E. J. DELANEY, Concord.

To Fort Oglethorpe for instruction, Capt. E. A. TRACY, Keene; Lieut. E. D. MIVILLE, Manchester.

To Mineola, N. Y., Hazelhurst Field, Lieut. L. R. BURNETT, Peterboro.

To Morrison, Va., Lieut. H. B. HAZEN, Lebanon.

New Jersey

To Camp Dix, N. J., base hospital, Capts. B. MORGAN, Bloomfield; M. A. SHANGLE, Elizabeth; G. W. SHERA, Jersey City.

To Camp Greene, N. C., Lieut. H. F. TIDWELL, Jersey City. For instruction, Lieut. J. WILLIS, Jr., Jersey City.

To Camp Holabird, Md., Capt. F. A. FINN, Jersey City.

To Camp Jackson, S. C., base hospital, Lieut. T. J. E. HOLMES, Paterson.

To Camp Lee, Va., base hospital, for instruction, Capt. G. MILLS, Morristown.

To Camp McClellan, Ala., for instruction, Capt. T. A. DINGMAN, Paterson.

To Camp Meade, Md., base hospital, Capt. G. B. V. WILKINSON, Morristown.

To Camp Sevier, S. C., Capt. G. W. FITCH, Asbury Park; Lieuts. E. D. McGIVERIN, J. L. ROSENSTEIN, Jersey City; S. HIRSCHBERG, Newark.

To Camp Shelby, Miss., base hospital, Capt. F. H. TODD, Paterson.

To Fort Oglethorpe for instruction, Capts. P. B. THOMPSON, Bloomfield; C. L. DECKER, J. I. FORT, Newark; Lieuts. J. W. HUGHES, Atlantic City; J. G. L. BORGMEYER, Bayonne; T. H. PLATT, Dunellen; R. B. THOMAS, G. D. WHITE, Jersey City; M. WEGMAN, Newark; G. J. VAN SCHOTT, Passaic; H. E. BRIODY, J. J. GREENGRASS, Paterson; W. J. HUDSON, Pleasantville; W. A. RULLMAN, Red Bank; E. S. BLACK, Williamstown.

To New Haven, Conn., Yale Army Laboratory School, for instruction, Lieut. H. E. BURBANK, Belleville.

To Washington, D. C., St. Elizabeth's Hospital, Capt. P. C. WASHBURN, Cape May Court House.

To Williamsbridge, N. Y., Capt. C. R. O'CROWLEY, Newark.

New Mexico

To Camp Cody, N. M., as tuberculosis examiner, Lieut. S. H. JAMES, Lordsburg.

New York

To Azalea, N. C., Capt. W. M. MEHL, Buffalo.

To Camp A. A. Humphreys, Va., base hospital, Lieut. M. RASHBAUM, New York.

To Camp Custer, Mich., base hospital, Capt. T. F. FOLEY, Elmira.

To Camp Devens, Mass., Lieut. E. M. POATE, New York. Base hospital, Lieuts. S. J. LIEBMAN, V. A. NARDIELLO, New York.

To Camp Dix, N. J., base hospital, Capt. B. SAMUELS, New York; Lieut. F. J. McMENAMIN, Oneonta. *To examine the command* for nervous and mental diseases, Lieut. H. A. OSSERMAN, New York.

To Camp Gordon, Ga., base hospital, Lieut. W. H. CONKLIN, New York.

To Camp Holabird, Lieuts. F. M. ROCHFORD, Brooklyn; H. C. SENKE, Geneseo.

To Camp Jackson, S. C., Lieuts. F. N. BIBBY, L. M. LESSER, New York; J. V. HIBBARD, Olive Bridge. Base hospital, Capts. W. E. CALDWELL, H. A. GRIFFIN, New York.

To Camp Lee, Va., Lieut. F. J. MacDONALD, Schenectady. Base hospital, Capt. F. W. MANLY, Naples; Lieut. A. L. OBERDORFER, New York. Base hospital, for instruction, Lieut. J. W. McCHESNEY, Baldwin.

To Camp McClellan, Ala., base hospital, Capt. J. J. KING, New York.

To Camp Meade, Md., Capt. L. C. BEEBE, Hamilton; Lieuts. C. H. TOPPING, Jefferson; R. J. LYNCH, Otisville. Base hospital, Capt. W. J. HEIMANN, New York.

To Camp Sevier, S. C., Lieuts. L. C. WARREN, Franklin; D. ELLNER, New York; W. A. MINOR, Utica. Base hospital, Lieut. D. W. JENNINGS, Catskill. Base hospital for instruction, Capt. W. E. BOWEN, Rochester.

To Camp Sherman, Ohio, Lieut. I. TRACHTENBERG, New York.

To Camp Wadsworth, S. C., Capt. H. J. VARY, Rochester; Lieut. A. WELLER, New York.

To Fort Oglethorpe for instruction, Capts. L. B. MOUNT, Albany; J. S. DORIAN, Brooklyn; P. J. CANDEE, Buffalo; L. B. HONEYFORD, Catskill; E. M. GRIFFITH, Chadwicks; M. M. LUCID, Cortland; G. LINDSAY, Freeport; W. H. CANTLE, Mamaroneck; L. W. CALLAN, C. J. DILLON, E. S. GUSHEE, F. X. PIDGEON, P. S. SABINE, New York; J. H. FINNESSY, W. H. SUTHERLAND, Rochester; P. E. GARLOCK, Schenectady; E. C. REIFENSTEIN, Syracuse; G. H. DILL, Utica; N. L. HAWKINS, Watertown; C. C. ZACHARIE, White Plains; Lieuts. A. E. CORDES, L. T. FRICKE, D. LIVINGSTONE, Brooklyn; A. H. CLARK, R. C. FISHER, Buffalo; A. C. COMBES, Elmhurst; M. F. HALL, Elmira; H. C. MANN, Holland; J. F. BOURKE, Jamaica; F. W. DALRYMPLE, New Rochelle; H. L. BALAMUTH, H. BLUM, A. BROOKS, R. T. COREY, L. W. CROSSMAN, A. F. A. DOOLING, D. I. FREY, J. S. HEIMAN, J. A. KELLER, I. J. LEVY, S. MILBANK, S. J. RAPHAELSON, S. SHEIFER, M. K. SMITH, New York; D. H. MILLS, Oneonta; E. F. STEWART, Ozone Park; R. W. MOE, Peekskill; E. H. BURNES, F. J. COLGAN, M. HOLTZ, H. L. PRINCE, E. R. REYNOLDS, G. B. VAN ALSTYNE, G. V. VETTER, Rochester; T. A. HULL, Troy.

To Lakewood, N. J., Lieut. L. L. SHAPIRO, New York.

To Mineola, N. Y., Hazelhurst Field, for instruction, Capts. A. J. BEDELL, Albany; E. P. HALL, Syracuse.

To Morrison, Va., Lieut. F. GAUCH, Brooklyn.

To New Haven, Conn., Lieuts. H. E. COHEN, E. L. CREEDEN, C. C. HAINES, G. G. HATZEL, J. KRANER, New York; V. M. PARKINSON, Wilton. Yale Army Laboratory School for instruction, Lieuts. M. LEDERER, T. S. WINSLOW, New York.

To New York, Neurological Institute, for instruction, Lieuts. H. S. BULL, Auburn; J. MARSHACK, I. J. SANDS, New York.

To Plattsburg Barracks, N. Y., Capt. T. E. BAMFORD, Syracuse.

To report to the commanding officer, Eastern Department, Capt. C. R. BAKER, Kingston.

To Walter Reed General Hospital, D. C., Major D. L. ROSS, White Plains.

To Washington, D. C., St. Elizabeth's Hospital, Capt. A. E. SOPER, New York.

North Carolina

To Camp Sevier, S. C., Capt. W. F. COLE, Greensboro.

To Fort Oglethorpe for instruction, Lieut. W. M. WILLIS, Farmville.

North Dakota

To Camp Grant, Ill., base hospital, for instruction, Capt. R. R. HOGUE, Linton.

To Fort Oglethorpe for instruction, Capt. A. A. WHITTEMORE, Bowman.

To Fort Riley for instruction, Capts. A. D. McCANNEL, Minot; G. W. CALLERSTROM, Northwood.

Ohio

To Ann Arbor, Mich., State Psychopathic Hospital, Lieut. V. ADAIR, Lorain.

To Army Medical School for instruction, Lieut. I. B. SMOCK, Canton.

To Camp Beauregard, La., base hospital, for instruction, Capt. C. A. HOWELL, Columbus.

To Camp Dodge, Iowa, base hospital, Capt. R. B. McLAUGHLIN, Centerburg; Lieut. H. G. BEATTY, Columbus.

To Camp Greene, N. C., base hospital, for instruction, Lieut. B. B. BRIM, Toledo.

To Camp Jackson, S. C., Lieuts. B. R. MILLER, Tiffin; H. L. PROUTY, West Unity. Base hospital, for instruction, Lieut. C. J. ALTMAIER, Marion.

To Camp Lee, Va., Lieut. F. R. CLEMSON, Thornville.

To Camp Meade, Md., Lieut. G. D. BLACK, Toledo.

To Camp Sevier, S. C., base hospital, for instruction, Lieut. D. H. PATTERSON, Cleveland.

To Camp Sheridan, Ala., base hospital, Capt. A. D. KNISELY, Lima.

To Camp Sherman, Ohio, Lieuts. K. H. CHANDLER, W. E. TREGO, Cleveland; W. C. MARTIN, Monroeville. Base hospital, Capt. H. R. GEYER, Zanesville; Lieuts. W. O. BONSER, Toledo; C. G. McPHERSON, Xenia. *To examine the command* for nervous and mental diseases, Lieut. C. H. CREED, Columbus.

To Camp Wadsworth, S. C., base hospital, Lieut. C. R. STEINKE, Akron.

To Camp Zachary Taylor, Ky., to examine the command for nervous and mental diseases, Capt. W. RAVINE, Cincinnati.

To Fort Oglethorpe for instruction, Capts. E. R. SCHOOLFIELD, Bucyrus; C. D. SLAGEL, Centerville; F. M. BURNS, Cincinnati; J. B. AUSTIN, S. W. EVANS, E. H. SEASON, Cleveland; J. B. URY, Defiance; W. H. RABBERMAN, Forest; E. S. PROTZMAN, Kenton; O. S. STEINER, Lima; C. B. MESSERLY, Martins Ferry; R. H. QUICK, Toledo; Lieuts. J. L. JONES, Akron; A. N. VANDEMAN, Bellbrook; L. D. STONER, Canton; W. D. MOCCABEE, Cardington; S. R. BAME, Carey; W. H. THOMPSON, Celina; J. J. CONZETT, E. HAHN, W. S. KAUTZ, Cincinnati; E. G. KUHLMAN, Cleveland; M. D. GODFREY, L. F. LAUFERSWEILER, Columbus; W. W. MANNHARDT, Custar; L. R. ELLARS, Dayton; E. J. LAUBER, Defiance; C. SMITH, Elida; T. P. FAST, Grover Hill; A. W. ANDERSEN, Lakewood; I. G. WHITACRE, Lodi; R. S. DOMBAUGH, Marion; W. A. [illegible] Mechanicsburg; T. QUINN, Napoleon; L. L. [illegible] A. F. BURSON, Oakwood; K. G. EVANS, Pa[illegible] Piqua; F. G. SMITH, Reily; [illegible] MAHONEY, Springfield; H. E. [illegible]AMPBELL, J. STAMM, E. S. WENDT, [illegible]rsailles; T. A. CAMPBELL, Wapakoneta; [illegible], W. E. HIGGS, A. M. ROSENBLUM, Youngstown.

To Morrison, Va., Lieut. P. M. PATTERSON, Toledo.

To New Haven, Conn., Yale Army Laboratory School, for instruction, Lieut. H. F. ROHRS, Napoleon.

To Washington, D. C., Capt. J. M. BESSEY, Toledo.

Oklahoma

To Camp Bowie, Texas, base hospital, Capt. L. A. HAHN, Guthrie.

To Camp John Wise, Texas, Lieuts. A. E. BALLARD, Madill; H. A. JERGESEN, Tulsa.

To Camp Logan, Texas, Capt. J. B. CLARK, Coalgate; Lieuts. E. GUINN, Antlers; J. M. WATSON, Lamont; E. F. HURLBUT, Meeker; J. M. LANNING, Muskogee; L. E. PEARSON, Reed; G. C. CAMPBELL, Sand Springs; R. G. McDONOUGH, Tulsa.

To Fort Oglethorpe for instruction, Capt. D. F. COLDIRON, Red Rock; Lieuts. H. WRIGHT, Grandfield; J. M. FEWKES, Gray; J. P. GAY, McAlester; W. O. HARTSHORNE, Spiro.

To the governor of the Panama Canal, Lieut. C. M. DRIVER, Mounds.

Oregon

To Camp Kearney, Calif., Capt. O. C. HAGMEIER, Seaside.

To Camp Lewis, Wash., Lieut. F. G. HEWETT, Independence. Base hospital, Capts. F. M. BROOKS, R. E. L. HOLT, Portland; Lieut. E. B. STEWART, Roseburg.

To Fort Riley for instruction, Lieut. E. D. LAMB, Union.

Pennsylvania

To Camp Custer, Mich., base hospital, for instruction, Capt. H. R. DECKER, Pittsburgh.

To Camp Dix, N. J., Lieut. J. F. DORAN, Wilkinsburg. Base hospital, Lieut. W. L. CARISS, Philadelphia.

To Camp Gordon, Ga., base hospital, for instruction, Capt. J. E. GOTWALS, Phoenixville.

To Camp Greene, N. C., base hospital, Capt. F. O. LEWIS, Philadelphia.

To Camp Jackson, S. C., Lieuts. G. M. DICKSON, Adamsburg; J. B. FEELEY, Glassport. Base hospital, Capt. S. A. S. METHENY, Philadelphia.

To Camp Lee, Va., base hospital, Lieut. G. H. MOORE, Schuylkill Haven.

To Camp Meade, Md., Lieuts. H. I. SHOENTHAL, New Paris; W. W. POULSON, Philadelphia; S. P. BOYER, Pittsburgh; G. K. LEVAN, Reading; T. E. McMURRAY, Wilkinsburg. Base hospital, Lieut. E. S. WEIMER, Pittsburgh.

To Camp Sheridan, Ala., base hospital, Capt. L. M. GURLEY, Johnston; Lieut. W. D. GRIESEMER, Reading.

To Camp Sherman, Ohio, to examine the command for nervous and mental diseases, Lieut. J. C. FULMER, Williamsport.

To Camp Wadsworth, S. C., base hospital, Lieut. M. R. DINKELSPIEL, Wilkes-Barre.

To Fort McPherson, Ga., Lieut. J. O. BOWER, Wyncote.

To Fort Oglethorpe for instruction, Capts. W. E. FINE, Ambler; S. P. GRAY, Chester; S. CHANDLER, M. F. PERCIVAL, W. S. WRAY, P[illegible] C. A. HILL, Pittsburgh; Lieuts. D. [illegible] BURKARTMAIER, Avondale; A. H[illegible]HRKASTE, Dormont; R. C. SEIPEL, I[illegible]sport; G. R. BLACKBURN, [illegible], J. L. FOSTER, Hoboken; [illegible], Knoxville; J. C. [illegible] SAUNDERS, Philadelphia; C. A. HAUCK[illegible] McADAMS, Pittsburgh; C. K. KISTLE[illegible] Schuylkill Haven; W. E. CAMPBELL, Sh[illegible] C. DIESS, Sharpsburg.

To Morrison, Va., Lieuts. G. T. FOX, Bristol; W. E. BOYER, Williamsport.

To New Haven, Conn., Capt. W. M. HAMILTON, Elrama. Yale Army Laboratory School, for instruction, Lieut. A. G. SANDBLAD, McKeesport.

To Walter Reed General Hospital, D. C., Capt. J. M. REED, Pittsburgh.

Porto Rico

To Camp Las Casas, P. R., Lieut. G. E. BIRD, Carolina.

Rhode Island

To Fort Oglethorpe for instruction, Lieuts. E. L. MYERS, W. C. ROCHELEAU, Woonsocket.

South Carolina

To Camp Gordon, Ga., base hospital, Capt. S. B. FISHBURNE, Columbia.

To Camp Jackson, S. C., Capt. J. I. BARRON, York. Base hospital, Major W. WESTON, Jr., Columbia.

To Camp Lee, Va., Lieut. W. L. BYERLY, Hartsville.

To Fort Oglethorpe for instruction, Capts. J. W. DAVIS, Clinton; C. N. RAKESTRAW, Rock Hill; Lieut. B. D. CAUGHMAN, Columbia.

South Dakota

To Camp Dodge, Iowa, base hospital, Capts. J. E. SCHWENDENER, Bryant; F. M. BALDWIN, Redfield.

To Fort Riley, base hospital, for instruction, Lieut. W. P. COLLINS, Howard.

Tennessee

To Camp Sevier, S. C., Lieut. C. S. KINZER, Kingsport.

To Camp Shelby, Miss., base hospital, Capt. B. D. AUSTIN, Nashville.

To Camp Wheeler, Ga., base hospital, for instruction, Capt. J. W. JOHNSON, Chattanooga.

To Camp Zachary Taylor, Ky., to examine the command for nervous and mental diseases, Lieut. L. E. TRENT, Nashville.

To Fort Oglethorpe for instruction, Capts. J. R. W. FOWLKES, Greenfield; W. J. MATTHEWS, Johnson City; M. M. COPENHAVER, Knoxville; J. H. DYER, [illegible] HENDERSON, Woodstock; Lieuts. H. Q. [illegible]OBS, Chattanooga; G. B. ALDER, Coalmo[illegible] Covington; V. D. KING, Memphis; H. S. [illegible], C. G. GRIFFIN, Nashville; C. B. A. TURNER, Newbern.

Texas

To Camp Bowie, Texas, base hospital, Capt. H. T. AYNESWORTH, Waco.

To Camp Logan, Texas, Major A. B. KENNEDY, Bonham; Capts. B. E. BRASSELTON, Bridgeport; R. H. GOUGH, Fort Worth; Lieuts. W. C. GOULD, Bells; J. B. LATHAM, Blackwell; W. B. SAUNDERS, Brashear; K. C. KNOLLE, Brenham; J. H. STEPHENSON, Dallas; J. R. HARRIS, Everman; S. A. LUNDY, A. J. MULLENNIX, Fort

Worth; A. A. SPEEGLE, Palestine; R. A. WILSON, Pontotoc; R. R. DAVIS, Three Rivers. Base hospital, Capt. H. L. WARWICK, Fort Worth; Lieut. S. H. GRANT, Deport. Base hospital, for instruction, Lieut. G. G. WYCHE, Iago.

To Camp MacArthur, Texas, Lieuts. C. E. FARRELL, Edgewood; J. R. HUNTER, El Paso; E. D. SHIPMAN, Purmela. Base hospital, Lieut. D. L. BETTISON, Dallas. Base hospital, for instruction, Lieut. J. S. CALHOUN, Dallas.

To Camp Travis, Texas, base hospital, Lieut. B. N. ARD, Dallas.

To Fort Bayard, Texas, Capt. C. W. COUTANT, San Antonio.

To Fort Oglethorpe for instruction, Major E. V. DE PEW, San Antonio; Capts. S. R. MILLIKEN, Dallas; A. L. LANE, Wichita Falls; Lieuts. J. S. TOMKIES, Dallas; J. M. DOSS, Flint; G. W. COVINGTON, Fort Worth; M. R. SHARP, Granger; W. P. HARRISON, Teague; G. G. BELL, Tyler.

To Fort Riley for instruction, Lieut. B. R. CARPENTER, Clifton.

To Fort Sam Houston, Texas, base hospital, Lieut. J. R. MIDDLEBROOK, Alpine.

To Fort Worth, Texas, Talliaferro Field, Lieut. W. T. McREA, Ennis.

To Leon Springs, Texas, Lieut. H. A. GILLIAM, Lamesa.

Utah

To Camp Cody, N. M., base hospital, Lieut. R. M. BROWN, Ogden.

To Camp Kearney, Calif., Capt. E. E. HINCKLEY, Salt Lake City.

To Fort Riley for instruction, Lieut. W. H. BASH, Sunnyside.

Vermont

To Fort Oglethorpe for instruction, Lieuts. D. J. CARROLL, Vergennes; D. S. DRAKE, White River Junction.

Virginia

To Camp Greene, N. C., base hospital, Capt. J. W. C. JONES, Newport News.

To Camp Joseph E. Johnston, Fla., Lieut. J. W. MARTIN, Richmond.

To Camp Meade, Md., Lieut. T. A. WILLIAMS, Middletown.

To Camp Sevier, S. C., Lieut. R. W. WOODHOUSE, Jr., Virginia Beach.

To Camp Wadsworth, S. C., Lieuts. W. R. CULBERTSON, Coeburn; W. H. EVANS, Lynchburg.

To Camp Wheeler, Ga., Lieut. C. A. AMOS, Rosemont.

To Camp Zachary Taylor, Ky., base hospital, Lieut. D. P. WEST, Norfolk.

To Fort Oglethorpe for instruction, Lieuts. L. P. TAYLOE, Orange; H. G. JOHNSON, Pearisburg; J. D. WILLIS, Roanoke; J. A. OWEN, South Boston.

To Newport News, Va., Lieut. R. L. HUDNALL, Beverlyville.

The following order has been revoked: *To Hoboken, N. J.,* Lieut. F. M. HORSLEY, Lovington.

Washington

To Camp Kearney, Calif., Capts. G. E. MURPHY, Olympia; W. H. APPLETON, Spokane; Lieuts, W. K. COCKLIN, Moxee City; W. A. MILLINGTON, Onalaska; B. F. BROOKS, Sedro Woolley; W. E. FORDYCE, Sunnyside.

To Camp Lewis, Wash., Lieuts. R. L. ROSS, Mineral; H. J. HARDS, Tacoma. Base hospital, for instruction, Lieut. H. C. COWAN, Walla Walla.

To San Francisco, Calif., Lieut. C. E. YOUNG, Rimrock.

West Virginia

To Camp Colt, Pa., Lieut. M. N. MASTIN, Piedmont.

To Camp Greene, N. C., Lieut. A. L. AMICK, Charleston.

To Camp Meade, Md., Lieuts. C. G. STROUD, Erbacon; O. V. BROOKS, Moorefield; V. L. NOE, Newton; T. GILLESPY, Wheeling.

To Camp Sevier, S. C., base hospital, Capt. O. B. BEER, Buckhannon.

To Fort Oglethorpe for instruction, Capts. W. J. LEAHY, Mannington; M. D. CURE, Weston; T. SLAYDEN, Williamson; Lieuts. W. J. THOMAS, Accoville; H. H. ESKER, Clarksburg; H. A. ROSENTHAL, Gypsey; R. C. MITCHELL, Junier.

To Morrison, Va., Lieut C. M. KIMBLE, Austen.

Wisconsin

To Camp Jackson, S. C., base hospital, Capt. A. J. PATEK, Milwaukee.

To Camp Meade, Md., Lieut. V. G. FOLEY, Wauwatosa.

To Camp Pike, Ark., for instruction, Lieut. A. YAFFE, Milwaukee.

To Fort Oglethorpe for instruction, Capts. W. A. PROUTY, Burlington; C. A. FIDLER, Milwaukee; R. W. JONES, Wausau; Lieuts. E. S. McNEVINS, Green Bay; J. J. HEFFRON, Milwaukee.

To Fort Riley, Capt. L. W. SAYLES, Baraboo. For instruction, Lieuts. G. E. BILSTAD, Cambridge; A. M. CHRISTOFFERSON, Colby; J. E. DONNELL, Cuba City; F. P. MARSHALL, Fond du Lac; F. L. CRIKELAIR, Green Bay; S. W. MURPHY, Kenosha; H. E. SCHMIDT, Milwaukee; C. M. SCHULDT, Platteville; J. A. COX, Wautoma.

To Mineola, N. Y., Hazelhurst Field, for instruction, Lieut. V. L. SIMONES, La Crosse.

Wyoming

To Camp Dodge, Iowa, base hospital, for instruction, Lieut. E. E. DALE, Lusk.

To Camp Meade, Md., Lieut. W. S. PUNCHEON, Rock Springs.

ORDERS TO OFFICERS OF THE MEDICAL CORPS, U. S. ARMY

Alabama

To Army Medical School for instruction, Lieut. P. P. SALTER, Montgomery.

To Camp Alfred Vail, N. J., from Nashville, Capt. J. W. FENN, Eufaula.

To Camp Beauregard, La., base hospital, from Camp Shelby, Lieut. R. P. BURKE, Montgomery.

To Camp Crane, Pa., from Camp Devens, Lieut. C. D. GASTON, Birmingham; from Camp Travis, Lieut. D. H. SPARKS, Ensley.

Honorably discharged on account of physical disability existing prior to entrance into the service, Capt. C. W. HILLIARD, Dothan.

Alaska

The following order has been revoked: *To Army Medical School* for instruction from Fort William H. Seward, Capt. H. M. CRAIG, Haines.

Arizona

To Camp Crane, Pa., from Camp Sherman, Major C. T. STURGEON, Globe.

Arkansas

To Camp Dix, N. J., from Fort Riley, Lieut. A. E. TATMAN, Eureka Springs.

To Hot Springs, N. C., from Fort Sam Houston, Capt. J. S. JENKINS, Pine Bluff.

California

To Camp Fremont, Calif., base hospital, Capt. C. D. Baker, Los Angeles. Base hospital, for instruction, Capt. R. PATEK, San Francisco.

To Camp Grant, Ill., from Long Island City, Major M. A. WILLIAMSON, Long Pine.

To Camp Meade, Md., from Fort Oglethorpe, Lieut. C. C. DICKINSON, McCloud.

To Camp Pike, Ark., base hospital, Lieut. A. H. CURRIE, Los Angeles.

To Camp Sherman, Ohio, base hospital, from Camp Lewis, Lieut. E. H. McMILLAN, Pasadena.

To Fort Oglethorpe for instruction, Capt. A. F. HAMMAN, Long Beach; Lieuts. R. L. CRUM, Los Angeles; R. K. BARRY, Sunnyvale.

To Fort Riley for instruction, from San Francisco, Capt. C. B. HARE, San Jose.

To Fort Sheridan, Ill., base hospital, from Camp Kearney, Lieut. G. A. BRIGGS, Sacramento; from Camp Lewis, Capt. A. A. ATKINSON, Dorris.

To Fort Snelling, Minn., base hospital, from Camp Kearney, Capts. H. A. FISKE, Pasadena; P. M. Savage, San Bernardino; J. WEHRLY, Santa Ana; from Camp Lewis, Capt. M. L. LOOMIS, Los Angeles; from San Francisco, Capts. F. K. COLLINS, Los Angeles; R. A. Whiffen, San Jose; Lieut. L. R. JOHNSON, Stockton.

Honorably discharged, Major A. C. MAGEE, San Diego, Capt. G. M. DUNNE, San Francisco.

Canal Zone

To New Haven, Conn., Yale Army Laboratory School, from Army Medical School, Lieut. J. W. SHERRILL, Ancon.

Colorado

To Camp Crane, Pa., from Camp Cody, Capt. E. G. GRIFFIN, Denver; from Camp Lewis, Capt. A. W. METCALF, Jr., Henderson.

To Camp Gordon, Ga., Capt. C. H. FISCHER, Walden.

To Camp Travis, Texas, Lieut. C. ENOS, Denver.

To Camp Zachary Taylor, Ky., from Army Medical School, Lieut. W. D. FLEMING, Denver.

To Denver, Colo., Capt. J. F. WALLACE, Woodmen. As examiner, from Plattsburg Barracks, Major F. H. McNAUGHT, Denver.

Connecticut

To Camp Custer, Mich., to examine the command for nervous and mental diseases, from Fort Des Moines, Capt. J. F. FAULKNER, New Britain.

To Camp Greene, N. C., base hospital, from Fort Oglethorpe, Major J. M. SLEMONS, New Haven.

To Camp Sevier, S. C., to examine the command for nervous and mental diseases, from Camp Jackson, Lieut. C. F. VERNLUND, Hartford.

To Fort Benjamin Harrison, from Hoboken, Capt. A. B. COLEBURN, Middletown. Base hospital, from Camp Custer, Major H. M. LEE, New London.

Delaware

To Camp Crane, Pa., from Lakewood, Lieut. A. K. LOTZ, Wilmington.

To Camp Jackson, S. C., base hospital, from Camp Joseph E. Johnston, Lieut. J. R. ELLIOTT, Laurel.

To Fort Oglethorpe for instruction, Lieut. H. H. DODD, Millsboro.

District of Columbia

To Boston, Mass., from the Surgeon-General's Office, Col. J. T. CLARKE.

To Camp Cody, N. M., as division surgeon, from Washington, Lieut.-Col. J. J. REDDY.

To Camp Crane, Pa., from Camp Dix, Lieut. D. W. PRENTISS, Washington.

To Camp Devens, Mass., from Army Medical School, Lieut. I. C. RIGGIN, Washington.

To Camp Gordon, Ga., from Army Medical School, Lieut. J. B. WHITE, Washington.

To Camp Sherman, Ohio, from Army Medical School, Lieut. M. C. SOSMAN, Washington. As division surgeon, from Washington, Lieut.-Col. W. T. CADE, Jr.

To Camp Wadsworth, S. C., as division surgeon, from Washington, Lieut.-Col. J. F. JOHNSTON.

To New Haven, Conn., Yale Army Laboratory School, from Army Medical School, Lieut. A. L. GUERRA, Washington.

Florida

To Camp Beauregard, La., base hospital, from Camp Shelby, Capt. F. J. BOWEN, Jacksonville.

To Camp Crane, Pa., from New Haven, Capt. H. O. BYRD, Trilby.

To Camp Gorden, Ga., from Army Medical School, Lieut. C. W. HENDERSON, Tampa.

To Camp Greene, N. C., base hospital, from Camp Wheeler, Major J. A. LIVINGSTON, Jacksonville.

To Camp Sherman, Ohio, from Fort Oglethorpe, Major M. B. SWIFT, Orlando.

Honorably discharged on account of physical disability existing prior to entrance into the service, Lieut. R. R. NIBLACK, New Smyrna.

Georgia

To Camp Beauregard, La., base hospital, from Camp Jackson, Lieut. J. S. STEWART, Athens; from Camp Sevier, Lieut. J. E. MORRISON, Savannah; from Fort Oglethorpe, Lieut. H. L. SUMMERLIN, Meigs.

To Camp Crane, Pa., from Camp Wheeler, Major C. C. HARROLD, Macon.

To Camp Custer, Mich., Lieut. J. O. KINARD, Atlanta.

To Camp Jackson, S. C., base hospital, from Camp McClellan, Lieut. W. M. FOLKS, Waycross.

To Camp Joseph E. Johnston, Fla., Lieut. R. N. BURCH, Milltown.

To Camp McClellan, Ala., evacuation hospital, from Fort Sam Houston, Lieut. S. P. WISE, Plaine.

To Fort Oglethorpe for instruction, Lieut. L. T. WATERS, Egypt.

To Hoboken, N. J., from Camp Mills, Major C. C. HARROLD, Macon.

To Hot Springs, N. C., from Camp Greene, Lieut. M. BLANCHARD, Columbus.

To Madison Barracks, N. Y., from Fort Oglethorpe, Lieut.-Col. C. W. HAVERKAMPF.

Honorably discharged, Lieut. P. J. PENISTON, Newman.

Hawaii

To Camp Zachary Taylor, Ky., from Army Medical School, Lieut. G. C. MILNOR, Honolulu.

Idaho

To Camp Grant, Ill., base hospital, Lieut. W. L. LINDSAY, Neuman.

To Camp Kearney, Calif., base hospital, from Camp Lewis, Capt. E. G. BRADDOCK, Lewiston.

Illinois

To Army Medical School for instruction, Lieuts. H. C. CAROTHERS, J. STEVENSON, Chicago.

To Camp A. A. Humphreys, Va., as orthopedic surgeon, from Fort Oglethorpe, and on completion *to Boston, Mass.*, Harvard Graduate School of Medicine, for instruction, Lieut. A. M. WASHBURN, Chicago.

To Camp Abraham Eustis, Va., camp hospital, from Millington, Tenn., Lieut. L. L. TURNER, Chicago.

[illegible] *La.*, base hospital, from Camp Logan, Capt. J. [illegible] from Camp Pike, Capt. C. W. COMPTON, Shelby. Capt. C. R. LOCKWOOD, Kankakee; [illegible] pt. B. J. LACHNER, Rock Island; from Camp Wadsworth, Lieut. B. J. SCHWARTZ, Waukegan; from Fort Oglethorpe, Capt. D. C. PHILLIPS, Lieut. B. J. MUSSELWHITE, Chicago; from Hot Springs, Ark., Capt. [illegible] Aurora.

To Camp Crane, Pa., Lieut. C. [illegible] from Army Medical School, Lieut. L. R. KR[illegible] amp Custer, Lieut. J. T. MEYER, Chicago; from Camp Lee, Capt. C. H. ZOLLER, Litchfield; from Camp Wadsworth, Capt. F. C. SIBLEY, Carmi; Lieut. C. F. HARRIS, Chicago; from Camp Wheeler, Capt. A. E. GAMMAGE, Chicago.

To Camp Greene, N. C., Lieut. R. A. VOIGHT, Chicago. Base hospital, from Camp Wadsworth, Capt. E. M. RUNDQUIST, Rockford. *To examine the troops* for cardiovascular diseases, from Lakewood, Lieut. A. SUMMERS, Oak Forest.

To Camp Hancock, Ga., base hospital, from Camp McClellan, Lieut. A. J. WEIRICK, Marseilles.

To Camp Joseph E. Johnston, Fla., from Fort Oglethorpe, Lieut. W. E. CLAY, Mount Carroll.

To Camp Kearney, Calif., from Fort Oglethorpe, Capt. J. M. BLUM, Chicago.

To Camp Lee, Va., to examine the command for nervous and mental diseases, from Camp Zachary Taylor, Lieut. E. C. PRATT, Kankakee.

To Camp Meade, Md., from Washington, Lieut. M. J. RABBINS, Chicago.

To Camp Sevier, S. C., base hospital, from Camp Logan, Capt. C. H. PARKES, Chicago; from Camp Travis, Lieut. W. K. REED, Chicago; from Fort Oglethorpe, Lieut. R. GRIFFY, Oblong.

To Camp Sherman, Ohio, from Columbus, Lieut. F. M. McNAIR, Sugar Grove. Base hospital, from Fort Oglethorpe, Capt. C. L. PATTON, Springfield.

To Camp Travis, Texas, from Fort Riley, Capts. C. S. DAVIS, Champaign; G. F. JOHNSON, East Moline.

To Camp Zachary Taylor, Ky., base hospital, Lieut. J. S EISENSTAEDT, Chicago; from Fort Oglethorpe, Lieut. H. F. MOORE, Rockford.

To Denver, Colo., from Walter Reed General Hospital, Capt. S. M. SALA, Rock Island.

To Edgewood, Md., base hospital, from Camp Meade, Capt. O. A. R. DONNELLY, Lieut. E. J. DEVINE, Chicago.

To Fort Benjamin Harrison, base hospital, from Camp Dodge, Lieut. E. A. CORCORAN, Chicago.

To Fort Des Moines, Iowa, from Walter Reed General Hospital, Major J. L. PORTER, Chicago.

To Fort McHenry, Md., from New York, Capt. P. P. HAZLITT, Marshall. For instruction, Capt. J. B. MOORE, Zeigler.

To Penniman, Va., from Army Medical School, Lieut. H. L. LE SAULNIER, Red Bud.

To Rockefeller Institute, Lieut. S. A. SMITH, Chillicothe.

To Washington, D. C., from Camp Lee, Major S. V. BALDERSTON, Evanston.

Honorably discharged on account of physical disability existing prior to entrance into the service, Capts. C. F. BURKHARDT, Effingham; C. P. COLBY, Springfield; B. [illegible] ner; Lieuts. C. C. Montgomery, Lincoln; W. F. [illegible]

The following order has b[illegible] *Snelling, Minn.*, base hospital, from Camp Grant, Lieut. A. S. SANDLER, Chicago.

Indiana

[illegible] base hospital, from Camp Travis, Lieut. G. [illegible] from Fort Oglethorpe, Capt. W. R. DA[illegible]

To Camp Logan, Texas, from Fort Riley, Capt. M. F. HUNN, Shipshowana.

To Camp Sevier, S. C., as tuberculosis examiners, from Camp Jackson, Lieut. C. F. VOIGT, New Albany; from New Haven, Lieut. J. M. GORDON, South Bend.

To Camp Sherman, Ohio, base hospital, from Camp Custer, Lieut. C. A. SELLERS, Hartford City.

To Camp Travis, Texas, from Fort Riley, Lieut. F. H. RILEY, Linnsburg.

To Camp Upton, N. Y., as orthopedic surgeon, from Jefferson Barracks, Capt. W. C. MOSS, Bunker Hill.

To Camp Zachary Taylor, Ky., from Terre Haute, Lieut. J. L. FORTUNE, Terre Haute. Base hospital, Capt. F. S. CROCKETT, LaFayette; from Camp Custer, Lieut. P. S. JOHNSON, Sheridan; from Fort Benjamin Harrison, Lieut. T. L. SULLIVAN, Indianapolis.

To Carlisle, Pa., from Baltimore, Capt. J. H. NILES, Seymour.

To Fort Bayard, N. M., from Camp Newton D. Baker, Lieut. B. R. KIRKLIN, Muncie.

To Fort Benjamin Harrison, Lieut. J. E. McCABE, Buck Creek.

To Fort Oglethorpe, base hospital, from Camp Dodge, Lieut. E. N. BENNETT, Kokomo. Evacuation hospital, from Camp Sherman, Lieut. C. C. BITLER, New Castle.

To Hot Springs, N. C., from Camp Bowie, Lieut. F. KLEINMAN, Hebron.

To San Diego, Calif., Rockwell Field, from Mineola, Lieut. K. M. [illegible] om Fort Benjamin Harrison, Capt. F. M. [illegible] eut. C. S. ALBERTSON, Walton. On [illegible] existing prior to entrance into the service, [illegible] omington; A. J. BAUER, LaFayette.

Iowa

To Camp Crane, Pa., from Camp Green, Capt. P. E. SAWYER, Sioux City.

To Camp Custer, Mich., from Fort Oglethorpe, Lieut. L. T. REED, Gravity.

To Camp Devens, Mass., base hospital, from Camp Dodge, Capt. M. A. HEALY, Boone; Lieut. J. G. CLAPSADDLE, Burt.

To Camp Dodge, Iowa, base hospital, for instruction, Lieut. C. A. MANAHAN, Marengo.

To Fort Benjamin Harrison, Lieut. P. V. KETCHUM, Des Moines. Base hospital, from Camp Grant, Capt. A. D. McKINLEY, Lieut. H. E. RANSOM, Des Moines.

To Fort Oglethorpe, base hospital, from Camp Dodge, Lieut. A. C. DAVIS, Iowa City. For instruction, from Camp Bowie, Lieut. B. S. BARNES, Shenandoah.

To Fort Snelling, Minn., base hospital, from Camp Dodge, Lieut. M. O. BRUSH, Shenandoah.

To Hot Springs, N. C., from Wichita Falls, Texas, Lieut. C. KAIL, Stratford.

To Plattsburg Barracks, N. Y., from Fort Oglethorpe, Major C. VAN EPPS, Iowa City.

Honorably discharged, Lieut. F. H. GAFFEY, Bradgate.

Kansas

To Camp Beauregard, La., base hospital, from Camp Pike, Capt. L. S. COPLAN, Wellington.

To Camp Crane, Pa., from Fort Riley, Capt. F. J. WALKER, Wichita.

To Camp Custer, Mich., to examine the command for nervous and mental diseases, from Fort Des Moines, Capt. C. E. ROSS, Wichita.

To Camp Devens, Mass., from Fort Riley, Capt. L. S. WAGAR, Florence. Base hospital, from Camp Dodge, Lieut. H. A. ALEXANDER, Topeka.

To Camp Dodge, Iowa, base hospital, Capt. F. A. ECKDALL, Emporia.

To Camp Greene, N. C., base hospital, from Camp Gordon, Lieut. E. D. RODDA, Arma.

To Camp Sherman, Ohio, base hospital, from Fort Oglethorpe, Lieut. M. F. RUSSELL, Great Bend.

To Rock Island, Ill., Capt. W. D. HUNT, Emporia.

Honorably discharged, Lieut. J. L. WORK, Topeka. On account of physical disability existing prior to entrance into the service, Lieut. O. J. DIXON, Mound Valley.

Kentucky

To Camp Crane, Pa., from New Haven, Lieut. G. S. BRZOZOWSKI, Louisville.

To Camp Custer, Mich., base hospital, from Camp Zachary Taylor, Capt. C. WILSON, Greenville.

To Camp Gordon, Ga., base hospital, for instruction, Lieut. A. H. SHOMWELL, Paducah.

To Camp Greene, N. C., base hospital, from Camp Sheridan, Capt. W. H. SMITH, Danville; Lieut. W. I. HUME, Louisville.

To Camp Jackson, S. C., base hospital, from Camp Sevier, Lieut. W. T. BRUNER, Louisville.

To Camp Zachary Taylor, Ky., Lieut. G. F. JONES, Henderson.

To Fort Oglethorpe for instruction, Capt. H. J. McKENNA, Louisville.

To Washington, D. C., from Louisville, Lieut.-Col. J. P. FLETCHER.

Honorably discharged, Lieut, L. E. GILBERT, Marion. On account of physical disability existing prior to entrance into the service, Capts. J. F. BRYANT, Corbin; D. J. WILLIAMS, Richmond; Lieuts. G. W. BOOHER, Berry; K. B. WOOLERY, Falmouth; J. R. COTTELL, Louisville; J. A. KIRK, Philpot.

Louisiana

To Camp Beauregard, La., base hospital, from Camp Pike, Lieut. H. D. VAN SCHAICK, Elizabeth.

To Camp McClellan, Ala., with the board examining the command for tuberculosis, from Camp Joseph E. Johnston, Lieut. B. R. HENINGER, New Orleans.

To Camp Sevier, S. C., *to examine the command* for nervous and mental diseases, from Camp Jackson, Lieut. P. Y. DONALD, Jackson.

To Camp Sherman, Ohio, evacuation hospital, from Camp Beauregard, Lieut. C. H. SHARP, New Orleans.

Honorably discharged on account of physical disability existing prior to entrance into the service, Capt. A. R. TRAHAN, Lafayette.

Maine

To Camp Crane, Pa., from Camp Devens, Lieut. J. E. POULIN, Augusta.

To Fort Oglethorpe, base hospital, from Camp Zachary Taylor, Capt. H. J. EVERETT, Portland.

To Newport News, Va., from Fort Oglethorpe, Lieut. W. J. LEWIS, Freeport.

Maryland

To Camp Crane, Pa., from Camp Lee, Lieut. B. M. JAFFE, Baltimore; from Fort Oglethorpe, Lieut. H. L. ROGERS, Baltimore.

To Camp Custer, Mich., from Army Medical School, Lieut. H. G JOHNSON, Baltimore.

To Camp Gordon, Ga., from Army Medical School, Lieut. G. H. PRESTON, Baltimore.

To Camp Grant, Ill., from Army Medical School, Lieut. C. M. REDDIG, Baltimore.

To Camp Jackson, S. C., from Army Medical School, Lieut. S. O. REESE, Jr., Baltimore. As orthopedic surgeon, and on completion *to Boston, Mass.*, Harvard Graduate School of Medicine, for instruction, from Fort Oglethorpe, Lieut. L. BRADY, Baltimore.

To Camp Meade, Md., base hospital, for instruction, Lieut. S. H. STREET, Baltimore.

To Camp Sevier, S. C., base hospital, from Camp Jackson, Lieut. J. T. NELSON, Baltimore.

To Camp Sherman, Ohio, base hospital, from Camp Sheridan, Capt. G. M. LINTHICUM, Baltimore.

To Fort Oglethorpe, evacuation hospital, from Camp Joseph E. Johnston, Capt. M. LEVY, Baltimore.

To Newport News, Va., Lieut. R. ROSEN, Baltimore.

To Walter Reed General Hospital, D. C., from Fort Oglethorpe, Lieuts. W. T. ANDERSON, L. BRADY, Baltimore.

To Washington, D. C., for consultation, *from Hoboken, N. J., Capt.* R. FAYERWEATHER, Baltimore.

Massachusetts

To Boston, Mass., Parker Hill, from the Surgeon-General's Office, Major P. BROWN, Boston; from Walter Reed General Hospital, Major F. J. COTTON, *Boston.*

To Camp Crane, Pa., from Camp Devens, Major E. L. DAVIS, Springfield; Capt. E. J. HUSSEY, Holyoke; Lieuts. G. A. BUCKLEY, Brockton; J. J. PAGLIA, Worcester; from Rockefeller Institute, Lieut. A. B. LYON, Boston; from Walter Reed General Hospital, Lieuts. G. W. BLOOD, Fall River.

To Camp Custer, Mich., base hospital, Major W. E. FAULKNER, Boston.

To Camp Devens, Mass., base hospital, for instruction, Lieut. P. D. BLANCHARD, Lowell.

To Camp Gordon, Ga., as camp psychiatrist, *from* Camp Upton, Major G. E. McPHERSON, Harding.

To Camp Greene, N. C., base hospital, from Camp Wadsworth, Lieuts. J. J. DONOVAN, Boston; C. T. COBB, Northampton; C. A. SCHILLANDER, Springfield.

To Camp Hancock, Ga., base hospital, from Walter Reed General Hospital, Major E. B. BIGELOW, Worcester.

To Camp Jackson, S. C., as orthopedic surgeon, and on completion *to Boston, Mass.*, Harvard Graduate School of Medicine, for instruction, from Camp Jackson, Lieut. D. F. MURPHY, Beverly.

To Camp Meade, Md., from Fort Oglethorpe, Lieut. D. S. KING, Brookline.

Honorably discharged on account of physical disability existing prior to entrance into the service, Lieut. J. B. THOMES, Pittsfield.

Michigan

To Camp Gordon, Ga., base hospital, from Camp McClellan, Capt. W. T. PARKER, Corunna.

To Camp Greene, N. C., base hospital, from Camp Gordon, Capt. O. L. RICKER, Cadillac.

To Camp Shelby, Miss., evacuation hospital, from Fort Oglethorpe, Lieut. D. L. PULFORD, Detroit.

To Camp Sherman, Ohio, evacuation hospital, from Camp Zachary Taylor, Capt. H. MacMULLEN, Manistee.

To Camp Zachary Taylor, Ky., as orthopedic surgeon, and on completion *to Boston, Mass.*, Harvard Graduate School of Medicine, for instruction, from Fort Oglethorpe, Lieut. E. J. LYNCH, Detroit. Base hospital, from Camp Sevier, Capt. A. W. McDONALD, Detroit. Base hospital, for instruction, Capt. J. N. BELL, Detroit.

To Fort Oglethorpe for instruction, Capt. C. F. SMITH, Whitehall.

To Fort Riley for instruction, Lieut. D. C. SMITH, Flushing.

To Hoboken, N. J., from Fort Oglethorpe, Lieut. P. R. URMSTON, Bay City.

To Hot Springs, N. C., from Camp Lee, Lieut. C. R. MUELLER, Detroit.

Honorably discharged on account of physical disability existing prior to entrance into the service, Lieut. H. L. CHARLES, Calumet.

Minnesota

To Camp Crane, Pa., from Fort Oglethorpe, Lieut. G. T. NORDIN, Minneapolis.

To Camp Custer, Mich., base hospital; from Camp Grant, Lieut. D. D. TURNACLIFF, St. Paul; from Camp Sherman, Lieut. H. J. A. J. HARTIG, Minneapolis.

To Camp Dodge, Iowa, base hospital from Camp Sherman, Lieut. F. N. KNAPP, St. Paul.

To Camp Grant, Ill., from Army Medical School, Lieut. C. F. SNELL, Twin Valley.

To Camp Meade, Md., from Camp Lee, Major J. C. SESSIONS, Minneapolis. Evacuation *hospital, from Camp* MacArthur, Lieut. F. W. WHITMORE, St. Paul.

To Fort Riley for instruction, Lieut. F. V. SANGENDORFER, St. Paul.

To Fort Sheridan, Ill., base hospital, from Camp 'Zachary Taylor, Capt. M. J. LYNCH, Minneapolis.

To report to the comanding general, Southern Department, from Fort Bayard, Lieut. V. H. MOATS, Minneapolis.

Honorably discharged, on account of physical disability existing prior to entrance into the service, Capt. J. A. McLAUGHLIN, Minneapolis.

Mississippi

To Camp Crane, Pa., from Camp Lewis, Lieut. L. B. NEAL, Jackson, from Jefferson Barracks, Lieut. F. H. RUSSELL, Wayside.

To Camp Jackson, S. C., base hospital, from Camp Sheridan, Lieut. T. G. CLEVELAND, Meridian.

To Camp Zachary Taylor, Ky., base hospital, from Fort McPherson,' Lieut. M. C. ARMSTRONG, Arm.

Honorably discharged on account of physical disability existing prior to entrance into the service, Capt. W. E. MOODY, Lake, Lieuts. M. E. BRIDGES, Bobo; W. C. NORRIS, Quitman.

Missouri

To Camp Beauregard, La., base hospital, from Camp Pike, Capt. J. W. MacDONALD, St. Louis; from Camp Shelby, Capt. N. SAENGER, Lieut. G. C. LYTTLE, St. Louis.

To Camp Cody, N. M., as assistant to division surgeon, from Camp Beauregard, Lieut. L. M. SPALDING, Olean. Base hospital, from Camp Travis, Capt. A. R. TIMERMAN, St. Joseph.

To Camp Crane, Pa., from Camp Dix, Capt. W. U. KENNEDY, St. Louis; from Camp Hancock, Lieut. F. F. HAAS, St. Louis; from Camp Lewis, Lieut. W. C. KLEIN, Kansas City; from Camp Zachary Taylor, Capt. J. M. DEAN, Lieut. P. McGENNIS, St. Louis.

To Camp Custer, Mich., as sanitary inspector, from Camp Pike, Capt. T. R. AYARS, St. Louis. Base hospital, from Camp Grant, Lieut. L. O. MUENCH, St. Paul. Base hospital, for instruction, Major J. H. OUTLAND, Kansas City.

To Camp Devens, Mass., from Fort Riley, Lieut. A. R. STONE, Palmyra.

To Camp Logan, Texas, Lieut. F. H. HARNAGEL, St. Louis.

To Camp Pike, Ark., base hospital, for instruction, Lieut. A. J. CAMPBELL, Sedalia.

To Camp Sevier, S. C., base hospital, from Camp Logan, Lieut. L. S. JAMES, Blackburn.

To Camp Sheridan, Ala., from Fort Oglethorpe, Lieut. J. T. MALONE, St. Louis.

To Camp Zachary Taylor, Ky., base hospital, from Camp Morrison, Lieut. J. C. PEDEN, St. Louis.

To Dansville, N. Y., from Camp McClellan, Capt. W. T. PATTERSON, Hannibal.

To Fort Oglethorpe, base hospital, from Camp Dodge, Lieut. J. L. SWARTZ, St. Louis.

To Fort Sheridan, Ill., base hospital, from Camp Grant, Capt. E. T. SENSENEY, St. Louis; from Cape May, Capt. J. R. VAUGHAN, St. Louis.

Honorably discharged on account of physical disability existing prior to entrance into the service, Capt. E. H. BRADLEY, Springfield; Lieut. W. B. INMAN, St. Louis.

Montana

To Camp Gordon, Ga., base hospital, from Camp Shelby, Capt. R. L. OWENS, Hamilton.

To Camp Travis, Texas, from Fort Riley, Lieut. J. E. STUART, Livingston.

To Fort Benjamin Harrison, Capt. P. H. McCARTHY, Butte.

To Fort Riley for instruction, Lieut. P. S. RENNICK, Stevensville.

To Fort Sheridan, Ill., base hospital, from Camp Grant, Lieut. J. W. OLSON, Troy; from Camp Kearney, Major R. HORSKY, Helena.

Nebraska

To Camp Crane, Pa., from Camp Custer, Lieut. O. E. COLEMAN, Ainsworth.

To Camp Custer, Mich., base hospital, *from* Western *Department*, Capt. C. H. CAMPBELL, Columbus.

To Camp Jackson, S. C., base hospital, from Camp Joseph E. Johnston, Lieut. J. W. DUNCAN, Omaha.

To Camp Sherman, Ohio, base hospital, from Cape May, Major E. C. HENRY, Omaha.

To Camp Travis, Texas, from Fort Riley, Capt. H. L. STARKEY, Wood River.

To Fort Leavenworth, Kan., Lieut. H. H. JOHNSON Winnebago.

Honorably discharged on account of physical disability existing prior to entrance into the service, Capt. E. R. PORTER, Omaha.

Nevada

To Camp A. A. Humphreys, Va., base hospital, from Camp Lee, Capt. J. P. CRAWFORD, Mina.

To Fort Oglethorpe for instruction, from Fort Sam Houston, Lieut. J. T. REES, McDermitt.

New Hampshire

To Camp Beauregard, La., base hospital, from Fort McPherson; Capt. J. B. WOODMAN, Franklin.

To Camp Crane, Pa., from Camp Devens, Capt. J. E. TOYE, Charleston.

To Fort Oglethorpe, evacuation hospital, from Camp Travis, Lieut. G. A. JOHNSON, Concord.

Honorably discharged on account of physical disability existing prior to entrance into the service, Capt. C. E. JOHNSTONE, Portsmouth.

New Jersey

To Army Medical School for instruction, from Walter Reed General Hospital, Lieut. C. F. VOORHIS, Palmyra.

To Camp Crane, Pa., from Camp Lee, Lieut. J. L. FARDEN, Irvington.

To Camp Dix, N. J., from Army Medical School, Lieut. T. W. CONNOLLY, Jersey City.

To Camp Gordon, Ga., base hospital, Lieut. C. P. CLARK, Summit.

To Camp Greene, N. C., as orthopedic surgeon, and on completion *to Boston, Mass.*, Harvard Graduate School of Medicine, for instruction, from Fort Oglethorpe, Lieut. W. G. McCORMACK, Whippany.

To Camp Jackson, S. C., Lieut. M. B. WEINSTOCK, Newark.

To Camp Meade, Md., from Army Medical School, Lieut. J. J. MANN, Perth Amboy.

To Fort McHenry, Md., for instruction, Capt. J. L. FEWSMITH, Newark.

To Fort Porter, N. J., Lieut. R. STEWART, Secausus.

To Hot Springs, N. C., from Edgewood, Lieut. J. J. MacDONALD, Jersey City; from Fort Ontario, Capt. E. B. ROGERS, Collingswood.

Honorably discharged on account of physical disability existing prior to entrance into the service, Capt. H. DAY, Chester; Lieuts. C. C. FERGUSON, Jersey City; T. L. CALDRONEY, North Hackensack.

New Mexico

To Whipple Barracks, Ariz., from Camp Cody, Capt. T. E. PRESLEY, Roswell.

Honorably discharged on account of physical disability existing prior to entrance into the service, Lieut. N. D. FRAZIN, Tyrone.

New York

To Army Medical School for instruction, Lieut. F. A. KNOPE, Rochester; from Camp Crane, Capt. G. M. PARKHURST, Bath; from Camp Raritan, Lieut. T. M. CALLADINE, Perry.

To Camp Beauregard, La., base hospital, from Camp Jackson, Lieut. W. C. MILLER, New York; from Fort Oglethorpe, Lieuts. M. L. HILLSMAN, Little Valley; W. W. OLIVER, New York.

To Camp Crane, Pa., from Army Medical School, Lieut. M. J. BRANDT, New York; from Camp Devens, Capt. R. A. EDSON, Buffalo; Lieuts. A. W. BECK, Brooklyn; E. A. CLARKE, Buff[illegible]; from Camp Dix, Capt. H. S. CAMPBELL, Otto; Lieuts. J. P. HLN-

NESSY, JR., New York; F. S. SCHOONOVER, Rochester; from Camp Greene, Capt. G. W. CONTERNO, New York; from Camp Jackson, Lieut.-Col. W. A. LAWRENCE, White Plains; from Camp Lee, Lieut. J. L. PRESTON, New York; from Camp Meade, Lieuts. J. L. EVERLOF, C. V. O'BRIEN, Brooklyn; from Camp Sheridan, Lieut. B. WILSON, New York; from Camp Zachary Taylor, Lieut. R. G. CARLIN, New York; from Fort Des Moines, Major T. WRIGHT, Buffalo; Capt. J. TENOPYR, Brooklyn; from Fort McPherson, Lieut. A. A. BERSIN, Brooklyn; from Fort Oglethorpe, Lieut. J. GOLDSTONE, New York; from New Haven, Lieut. A. SCHULTZ, Brooklyn; from Walter Reed General Hospital, Lieut. C. G. STEINHAUSER, Rochester; from Williamsbridge, Major L. G. COLE, New York.

To Camp Custer, Mich., from Army Medical School, Lieut. R. M. DEGRAFF, Buffalo. Base hospital, from Camp Sherman, Capts. J. R. HERRICK, Hempstead; D. S. CONLEY, New York.

To Camp Lee, Va., from Fort Oglethorpe, Major T. DARLINGTON, New York.

To Camp McClellan, Ala., base hospital, from Camp Beauregard, Lieut. H. W. KEMP, Brooklyn. *To examine the troops for cardiovascular diseases,* from Lakewood, Lieut. A. TOWBIN, Flushing.

To Camp Meade, Md., Lieut. R. MALCOLM, Yonkers; from Army Medical School, Lieuts. R. BOGAN, Brooklyn; H. T. COMPTON, New York.

To Camp Sevier, S. C., base hospital, from New Haven, Capt. W. A. GROAT, Syracuse.

To Camp Sheridan, Ala., as orthopedic surgeon, from Camp Wheeler, Lieut. L. FASKE, Brooklyn.

To Camp Upton, N. Y., Capt. F. OVERTON, Patchogue; from Army Medical School, Lieuts. F. DAMRAU, W. V. MOORE, Brooklyn; W. S. BENNETT, Glen Falls; C. G. IRISH, E. A. LANE, New York.

To Camp Wadsworth, S. C., as sanitary inspector, from Camp MacArthur, Major T. W. MALONEY, Geneva.

To Camp Zachary Taylor, Ky., base hospital, from Camp McClellan, Capt. F. M. O'GORMAN, Buffalo; from Fort McPherson, Lieut. S. E. APPEL, Dover Plains.

To Fort Benjamin Harrison, base hospital, from Camp Cody, Lieut. I. M. LEAVY, New York.

To Fort Hancock, N. J., from New York, Capt. J. R. FARRELL, New York.

To Fort Meyer, Va., from Hampton, Va., Major A. G. COUMBE, Mineola.

To Fort Oglethorpe for instruction, Lieuts. C. E. CURTISS, Manlius; L. A. GERACI, F. W. RICE, New York.

To Fort Porter, N. Y., from Fort Oglethorpe, Lieut. A. B. FERGUSON, New York.

To Fort Sheridan, Ill., base hospital, from Camp Devens, Lieut. W. H. HAWKINS, New York.

To Hoboken, N. J., from Camp Gordon, Lieut. T. W. NEUMANN, Poughkeepsie; from Camp Upton, Lieut. M. A. RAMIREZ, New York. Base hospital, from Camp A. A. Humphreys, Capt. I. HOLLEY, Brooklyn.

To Walter Reed General Hospital, D. C., for instruction in amputation and artificial limbs, from the Surgeon-General's Office, Capt. C. E. E. PANNACI, Gloversville.

To Washington, D. C., for consultation, and on completion *to Camp Lee, Va.*, as orthopedic surgeon, from Fort Riley, Major C. D. NAPIER, Brooklyn. On completion *to Camp Shelby, Miss.*, from Syracuse, Capt. M. A. ROTHSCHILD, New York. For instruction, from New York, Capt. H. W. HAYNES, New York. St. Elizabeth's hospital, for instruction, from Plattsburg Barracks, Lieut. M. E. COSTELLO, Branchport.

To Williamsbridge, N. Y., Lieut. M. D. GOLDFEIN, Brooklyn.

Honorably discharged on account of physical disability existing prior to entrance into the service, Capt. O. C. J. VON RENNER, Buffalo.

The following orders have been revoked: *To Army Medical School*, from Rockefeller Institute, Lieut. W. C. STADIE, New York. *To Fort Snelling, Minn.*, base hospital, Lieut. M. SONKIN, New York.

North Carolina

To Azalea, N. C., from New Haven, Capt. T. P. CHEESBOROUGH, Asheville.

To Camp Lee, Va., from Army Medical School, Lieuts. J. W. CLARKSON, Hickory; J. H. BULLOCK, Oxford.

To Camp Sherman, Ohio, base hospital, from Fort Oglethorpe, Capt. F. J. PATE, Greensboro.

To Fort Oglethorpe, as instructor in internal medicine, from Camp Custer, Major T. FRAZER, Asheville.

To Washington, D. C., for consultation, and on completion *to Camp Crane, Pa.*, from Camp Greene, Lieut.-Col. H. M. SNYDER.

North Dakota

To Camp Grant, Ill., base hospital, for instruction, Lieut. A. J. KAESS, Fargo.

Ohio

To Camp Abraham Eustis, Va., camp hospital, Lieut. S. WOLF, Cincinnati.

To Camp Cody, N. M., from Fort Oglethorpe, Capt. W. M. BLAINE, Youngstown.

To Camp Crane, Pa., from Camp Custer, Lieut. C. T. BAHLER, Walnut Creek; from Camp Dix, Capt. C. D. HOY, Columbus; from Camp Jackson, Lieut. M. S. GRIFFITH, Batavia; from Fort McHenry, Major N. M. JONES, Cleveland; from Fort Oglethorpe, Capt. A. E. IBERSHOFF, Cleveland; from New Haven, Lieuts. R. H. MARKWITH, Columbus; V. B. HALBERT, Sylvania.

To Camp Joseph E. Johnston, Fla., from Fort Oglethorpe, Lieut. C. A. LINGENFELTER, Bucyrus.

To Camp McClellan, Ala., Lieut. R. A. THORNTON, Columbus.

To Camp Pike, Ark., base hospital, Lieut. A. H. CARR, Reading.

To Camp Shelby, Miss., base hospital, Capt. D. C. HOUSER, Urbana. Base hospital, for instruction, Lieut. C. V. DAVIS, Cleveland. Evacuation hospital, from Fort Sam Houston, Lieut. R. E. LIGHTNER, Kingston.

To Camp Sheridan, Ala., base hospital, Capt. H. M. TARR, Cleveland Heights Village.

To Jefferson Barracks, Mo., from Fort Riley, Lieut. G. H. REEVE, Cleveland.

Honorably discharged on account of physical disability existing prior to entrance into the service, Lieuts. J. L. TODD, Canton; J. T. BOYKIN, Cleveland; E. E. SHEFFIELD, Elyria; I. P. SEILER, Piketon; W. A. ORT, Springfield.

Oklahoma

To Camp Crane, Pa., from Camp Hancock, Lieut. R. L. WESTOVER, Okmulgee; from Camp MacArthur, Lieut. C. N. BERRY, Norman; from Fort Riley, Lieut. C. A. BRAKE, Oklahoma City.

To Camp Gordon, Ga., base hospital, from Fort Riley, Capt. E. L. BAGBY, Fairfax.

To Camp Greene, N. C., base hospital, from Fort Oglethorpe, Lieut. H. BLENDER, Okeene.

To Camp Sevier, S. C., base hospital, from Camp Joseph E. Johnston, Capt. B. LOVELADY, Guthrie; Lieut. V. C. TISDAL, Elk City.

To Camp Sherman, Ohio, base hospital, from Camp Bowie, Lieuts. C. E. CALHOUN, Sand Springs; C. E. DAVIS, Woodward; from Fort Des Moines, Lieut. R. L. PENDERGRAFT, Hollis.

To Camp Travis, Texas, Lieut. W. H. AARON, Pawhuska.

To Camp Zachary Taylor, Ky., base hospital, from Camp Sevier, Lieut. L. M. SACKETT, Oklahoma City.

Honorably discharged on account of physical disability existing prior to entrance into the service, Lieut. J. G. THOMAS, Alluwe.

Oregon

To Camp Devens, Mass., from Fort Riley, Capt. V. R. ABRAHAM, Hood River.

To Camp Gordon, Ga., as orthopedic surgeon, and on completion *to Boston, Mass.*, Harvard Graduate School of Medicine, for instruction, from Fort Oglethorpe, Lieut. R. E. WATKINS, Portland.

To Philadelphia, Pa., Jefferson Medical College, for instruction, from Camp Abraham Eustis, Lieut. A. O. WALLER, Eugene.

Pennsylvania

To Camp Beauregard, La., base hospital, from Fort Oglethorpe, Capt. J. W. SCHOFFSTALL, Sunbury.

To Camp Crane, Pa., from Army Medical School, Lieut. J. M. FLEMING, Blairs Mills; from Camp Custer, Lieut. C. B. LAMP, Seminole; from Camp Devens, Capt. J. TURNER, Philadelphia; from Camp Dix, Major P. H. MOORE, Philadelphia; Capt. S. W. MILLER, Lancaster; Lieuts. I. H. SHELLY, Ambler; L. C. RUMMAGE, Sweet Valley; from Camp Dodge, Capt. J. WARD, Lucernemines; from Camp Lee, Lieuts. E. M. HUGHES, Butler; V. P. VIESLET, Charleroi; A. E. S. CASEY, Philadelphia; from Camp Pike, Lieut. G. B. SCHOONMAKER, Philadelphia; from Camp Sevier, Lieut. A. E. COLCHER, Philadelphia; from Camp Sherman, Lieut. G. GINSBURG, Philadelphia; from Fort Oglethorpe, Lieut. J. E. MAGEE, Carnegie; from New Haven, Lieut. H. W. KINDERMAN, Philadelphia.

To Camp Dix, N. J., from Army Medical School, Lieuts. W. C. McCONNELL, Norberth; G. A. BROWN, J. B. HAINES, E. W. KEMNER, Philadelphia; L. H. FITZGERALD, Pittsburgh; from Walter Reed General Hospital, Lieut. S. B. PEARCE, Pittsburgh.

To Camp Dodge, Iowa, base hospital, Capt. C. E. McKEE, Pittsburgh.

To Camp Greene, N. C., evacuation hospital, from Southern Department, Lieut. D. M. AIKMAN, Brockwayville.

To Camp Jackson, S. C., from Army Medical School, Lieut. P. S. SEABOLD, Philadelphia.

To Camp Las Casas, P. R., camp hospital, Major C. H. SMITH, Uniontown.

To Camp Meade, Md., from Army Medical School, Lieut. G. M. UNDERWOOD, Philadelphia.

To Camp Sevier, S. C., base hospital, from Camp Joseph E. Johnston, Lieut. G. S. HENSYL, Mahoney City; T. B. HERRON, Monesson.

To Camp Wadsworth, S. C., Lieut. R. H. LUKE, North Erie.

To Denver, Colo., from New Haven, Capt. J. C. FOLTZ, Philadelphia; N. D. MACARTAN, Cresson.

To Detroit, Mich., from Cleveland, Capt. A. B. SHATTO, York.

To F[illegible] base hospital, from Lakewood, Lieut. C. W. [illegible].

To F[illegible] hospital, from Ann Arbor, Lieut. J. P. BOYLE, Philadelphia. For instruction, Lieut. J. M. KEICHLINE, Petersburg.

Honorably discharged on account of physical disability existing prior to entrance into the service, Capt. A. K. WANNER, Reading; Lieut. D. M. KOONTZ, New Kensington.

The following order has been revoked: *To Walter Reed General Hospital, D. C.*, from Fort Oglethorpe, Lieut. W. C. REESE, Wilkes-Barre.

Philippine Islands

To San Francisco, Calif., from Philadelphia Department, Major A. C. MILLER.

South Carolina

To Camp Crane, Pa., from Camp Devens, Lieut. F. L. MARTINE, Mullins; from Camp Dix, Lieut. A. E. BROWN, Greenville; from Walter Reed General Hospital, Lieut. J. K. WICKER, Newberry.

To Camp Wadsworth, S. C., from Panama Canal Department, Capt. T. J. PEAKE, Clinton.

The following order has been revoked: *To New Haven, Conn.*, Yale Army Laboratory School, for instruction, from Columbia, S. C., Lieut. J. A. HAYNES, Columbia.

South Dakota

To Camp Beauregard, La., base hospital, from Camp Pike, Capt. B. A. BOBB, Mitchell.

To Camp Crane, Pa., from Camp Dodge, Lieut. R. REAGAN, Garretson.

To Fort Benjamin Harrison, base hospital, from Camp Grant, Lieuts. G. E. VAN DEMARK, Sioux Falls; V. R. HODGES, Terry.

To Fort Warren, Mass., from Fort Oglethorpe, Lieut. B. C. MURDY, Aberdeen.

Tennessee

To Camp Cody, N. M., as tuberculosis examiner, from Fort Bayard, Capt. F. B. BREWER, Nashville

To Camp Dodge, Iowa, base hospital, from Biltmore, N. C., Capt. O. B. CHANDLER, Union City.

To Camp Shelby, Miss., base hospital, Lieut. H. K. ALEXANDER, Nashville.

To Fort Oglethorpe, evacuation hospital, from Ann Arbor, Lieut. P. J. TRENTZSCH, Rives. For instruction, Major R. M. KIRBY-SMITH, Sewanee.

Honorably discharged on account of physical disability existing prior to entrance into the service, Lieut. B. E. NOBLITT, Fayetteville.

Texas

To Camp Beauregard, La., base hospital, Lieut. E. L. MAXWELL, Delhart; from Camp Logan, Capt. E. F. McMANUS, San Antonio. Base hospital, for instruction, Capt. H. M. LANHAM, Waco.

To Camp Crane, Pa., from Camp Bowie, Lieut. T. C. GILBERT, Dallas; from Camp Custer, Major S. F. Terrell, Dallas; from Fort Oglethorpe, Lieut. E. V. HENRY, Coleman.

To Camp Gordon, Ga., base hospital, from Camp Shelby, Major J. G. FLYNN, Galveston; Lieut. F. W. FRANCIS, Fort Worth.

To Camp Greene, N. C., from Dayton, Capt. D. L. SANDERS, Wills Point. Base hospital, from Southern Department, Lieut. L. J. LOGUE, Houston.

To Camp Hancock, Ga., evacuation hospital, from Fort Sam Houston, Capt. G. W. WILHITE, Calsetine.

To Hot Springs, N. C., from Camp Bowie, Lieut. A. R. AUTREY, Port Authur.

To New Haven, Conn., Yale Army Laboratory School, from Army Medical School, Lieut. O. T. KIRKSEY, Galveston.

Honorably discharged on account of physical disability existing prior to entrance into the service, Capt. L. P. ALLISON, Brownwood; Lieut. W. L. BABER, Winnsboro.

The following order has been revoked: *To Camp Joseph E. Johnston, Fla.*, base hospital, Lieut. A. S. GRAYDON, Paris.

Utah

To Camp Crane, Pa., from Camp Cody, Capt. P. INGEBRETSEN, Ogden; from Camp Fremont, Capt. F. M. McHUGH, Salt Lake City; from New Haven, Lieut. B. A. DENNENBERG, Heber.

To Camp Dodge, Iowa, base hospital, from Camp Cody, Lieut. W. N. PUGH, Salt Lake City.

To Camp Wheeler, Ga., evacuation hospital, from Camp Cody, Capt. H. P. KIRTLEY, Salt Lake City.

Vermont

To Camp Crane, Pa., from New Haven, Capt. H. L. CRAHAN, Rutland.

To Camp Gordon, Ga., base hospital, from Fort Oglethorpe, Capt. E. G. TWITCHELL, Burlington.

To Camp Upton, N. Y., base hospital, from Hoboken, Major C. D. WILKINS, Brattleboro.

To Camp Wheeler, Ga., base hospital, Lieut. L. M. KELLY, Manchester Center.

To Fort McHenry, Md., from Walter Reed General Hospital, Capt. W. J. TINDALL, Montpelier.

To New Haven, Conn., Yale Army Laboratory School, for instruction, from Rockefeller Institute, Lieut. A. L. FOGG, Underhill.

Honorably discharged on account of physical disability existing prior to entrance into the service, Capts. N. R. CALDWELL, Groton; S. S. MARTIN, Windsor.

Virginia

To Camp Crane, Pa., from Fort Oglethorpe, Lieut. W. S. TUCKER, New Glasgow; from New Haven, Lieut. C. B. COURTNEY, Fairfax.

To Fort Oglethorpe, base hospital, from Newport News, Capt. T. C. FIREBAUGH, Harrisburg.

To report to the commanding general, Philippine Department, from Fort Ontario, Major J. W. HOPE, Hampton.

To Syracuse, N. Y., from Fort Meyer, Major A. G. COOMBE.

Honorably discharged on account of physial disability existing prior to entrance into the service, Lieuts. H. S. SCOTT, Emory; L. B. STATON, Norfolk.

Washington

To Camp Crane, Pa., from Camp Cody, Capt. G. A. GRAY, Spokane.

To Camp Zachary Taylor, Ky., base hospital, from Camp Custer, Lieut. J. S. DAVIES, Tacoma.

To Fort Oglethorpe, evacuation hospital, from Camp Lewis, Lieut. J. HEHIR, Sedro-Wooley.

To Fort Sheridan, Ill., base hospital, from Camp Custer, Lieut. W. H. BOONE, North Yakima.

To Fort Snelling, Minn., base hospital, from Camp Lewis, Lieut. W. F. CUNNINGHAM, Seattle.

The following order has been revoked: *To Camp Kearney, Calif.*, Lieut. C. S. PASCOE, Tacoma.

West Virginia

To Camp Bowie, Texas, base hospital, from Camp Gordon, Capt. C. DENHAM, Weston.

To Camp Crane, Pa., from Fort McPherson, Lieut. B. B. COX, Morgantown.

To Camp Custer, Mich., base hospital, for instruction, Major J. E. CANNADAY, Charleston.

To Camp McClellan, Ala., evacuation hospital, from Fort Sam Houston, Lieut. T. E. VASS, Bluefield.

To Camp Meade, Md., Capt. C. P. SHIRKEY, St. Albans.

To Camp Sevier, S. C., base hospital, Lieut. W. T. OWENS, Clarksburg.

To Fort Oglethorpe for instruction, Capt. G. A. MacQUEEN, Charleston.

Honorably discharged on account of physical disability existing prior to entrance into the service, Lieut. A. E. BAYS, Barboursville.

Wisconsin

To Army Medical School for instruction, from Rantoul, Ill., Lieut. D. L. DAWSON, Rice Lake.

To Camp Abraham Eustis, Va., camp hospital, and on completion *to Boston, Mass.*, Harvard Graduate School of Medicine, for instruction, from Fort Oglethorpe, Capt. J. W. POWERS, Burlington.

To Camp Custer, Mich., from Fort Oglethorpe, Lieut. S. J. SEEGER, Milwaukee. Base hospital, from Camp Sherman, Capt. F. E. ANDRE, Kenosha. Base hospital, for instruction, Lieuts. R. E. FLYNN, La Crosse; H. McCABE, Milwaukee.

To Camp Gordon, Ga., base hospital, from Camp Gordon, Lieut. J. W. HANSEN, Milwaukee.

To Camp Grant, Ill., from Army Medical School, Lieut. C. A. CIBELIUS, Racine.

To Camp Jackson, S. C., base hospital, Capt. S. G. PAKE, Hayward.

To Camp Sherman, Ohio, as sanitary inspector, from Camp Zachary Taylor, Major W. W. PRETTS, Platteville. *To examine the command* for nervous and mental diseases, from Camp Grant, Capt. J. F. WENN, Milwaukee.

To Camp Travis, Texas, from Fort Riley, Capt. F. W. McKEE, Richland Center; Lieut. S. C. McCORKLE, Wallis.

To Fort Benjamin Harrison, base hospital, from Camp Custer, Lieut. V. STARNES, Mauston; from Camp Grant, Lieut. J. B. VEDDER, Marshfield.

To Fort Riley for instruction, Capt. A. J. GATES, Tigerton; Lieut. H. J. GRAMLING, Milwaukee.

Honorably discharged on account of physical disability existing prior to entrance into the service, Lieut. G. F. KENNEY, Milwaukee.

Wyoming

To Fort Benjamin Harrison, base hospital, from Camp Custer, Capt. C. E. HARRIS, Basin; from Fort Riley, Capt. G. A. FOX, Cheyenne.

To New Haven, Conn., from Fort Riley, Capt. M. A. NEWELL, Sheridan.

ORDERS TO OFFICERS OF THE UNITED STATES PUBLIC HEALTH SERVICE

Surg. JOHN McMULLEN, proceed to Nitro, W. Va., for conference relative to treatment of applicants for employment suffering from trachoma.

Surg. G. W. McCOY, represent the service at the meetings of the Laboratory Section of the American Public Health Association at Chicago.

P. A. Surg. F. A. CARMELIA, relieved at Newport News, Va. Proceed to bureau for duty.

P. A. Surg. E. W. SCOTT, relieved at Washington, D. C. Proceed to Rosebank, Staten Island, N. Y., for duty.

P. A. Surg. JOSEPH BOLTEN, relieved at the Hygienic Laboratory. Proceed to the San Francisco Quarantine Station for duty.

P. A. Surg. W. L. TREADWAY, proceed to Nitro, W. Va., and advise regarding installation and operation school medical inspection system.

P. A. Surg. J. G. TOWNSEND, proceed to Ranger and Petrolia, Texas, to supervise sanitary work.

Asst. Surg. W. F. FOX, visit Houston, Texas, to study venereal disease control methods.

Prof. C. W. STILES, proceed to Wilmington, N. C., for duty.

Prof. E. B. PHELPS, proceed to places in the vicinity of Washington to investigate public need of a contemplated improvement.

Pharm. C. H. BIERMAN, proceed to Boston Quarantine Station for temporary duty.

A. A. Surg. O. D. ADAMSON, relieved at Columbia, S. C. Proceed to Fayetteville, N. C., for duty.

A. A. Surg. J. B. ELLIOTT, relieved at Florence, Ala. Proceed to Little Rock, Ark., for duty.

A. A. Surg. ROBERT E. GRAMLING, proceed to Leavenworth, Kan., for duty in venereal control.

A. A. Surg. W. F. REASNER, proceed to Hattiesburg, Miss., for duty.

A. A. Surg. I. P. ROBINSON, relieved at Leavenworth, Kan. Proceed to Washington, D. C.

A. A. Surg. GEORGE W. SHIRK, proceed to Houston, Texas, for duty in venereal disease control.

San. Eng. H. W. STREETER, proceed to Cincinnati and Lima, Ohio, to investigate public health value of contemplated improvements.

Asst. San. Eng. H. F. S. TAIT, proceed to Shreveport, La., to investigate public health value of contemplated improvement.

Asst. Epid. C. C. APPLEWHITE, relieved at Englewood, N. J. Proceed to Atlanta, Ga., for duty.

Scien. Asst. SAMUEL SAUNDERS, Jr., assume charge of health activities in Brunswick and Glenn County, Ga.

Asst. Director DAVID ROBINSON, proceed to Philadelphia and confer with the State Counsel of National Defense concerning venereal control measures.

Surg. J. GOLDBERGER, directed to proceed to New England and other states to undertake studies in regard to the etiology of influenza with special reference to its transmission.

Surg. L. P. H. BAHRENBERG, deliver an address at the Missouri Baptist state convention at Fulton, Mo., Oct. 22, 1918.

P. A. Surg. H. J. WARNER, relieved at Atlanta, Ga., proceed to Ellis Island, N. Y.

P. A. Surg. W. F. DRAPER, proceed to Boston, Mass., to assume charge of Service operations in connection with control of epidemic diseases.

P. A. Surg. G. A. KEMPF, proceed to Boston, Mass., for duty in the suppression of influenza.

P. A. Surg. J. H. LINSON, proceed to Boston, Mass., for duty in the suppression of influenza.

Asst. Surg. H. C. YARBROUGH, proceed to the Reedy Island Quarantine Station for temporary duty.

Asst. Surg. T. B. H. ANDERSON, proceed to Wichita and other points in the state of Kansas for duty in inaugurating venereal disease clinics.

Asst. Surg. C. R. ESKEY, relieved at Montgomery, Ala., proceed to Boston, Mass., for duty in the suppression of influenza.

Asst. Surg. CHARLES ARMSTRONG, proceed to Boston, Mass., for duty in the suppression of influenza.

Asst. Surg. R. E. DYER, proceed to Boston, Mass., for duty in the suppression of influenza.

Asst. Surg. J. K. FULLER, proceed to Boston, Mass., for duty in the suppression of influenza.

Asst. Surg. R. P. SANDIDGE, relieved at Louisville, Ky., proceed to Boston, Mass., for duty in the suppression of influenza.

A. A. Surg. D. A. BUCK, relieved at Baltimore, Md., proceed to Norfolk, Va., for duty.

A. A. Surg. W. C. EDMUNDS, proceed to Boston, Mass., for duty in the suppression of influenza.

A. A. Surg. F. F. FARNSWORTH, attend the meeting of the American Public Health Association at Chicago, Ill., Oct. 14-17, 1918.

A. A. Surg. ARTHUR R. PILLSBURY, proceed to Boston, Mass., for duty in connection with venereal disease control measures.

A. A. Surg. STAFFORD B. SMITH, proceed to New York City for duty in venereal disease control measures.

A. A. Surg. ABRAHAM TRUMPER, relieved at San Antonio, Texas, proceed to Montgomery, Ala., for duty in extracantonment sanitation.

A. A. Surg. W. A. WILSON, proceed to various places in the state of New York for duty in connection with venereal disease control.

Medical News

(Physicians will confer a favor by sending for this department items of news of more or less general interest; such as relate to society activities, new hospitals, education, public health, etc.)

ARKANSAS

Medical Society Meeting Deferred.—After a consultation with the executive officers of the Third District Medical Society, it was decided to defer the annual meeting until next year because of the disturbed conditions in the profession. The meeting was to have been held at Lonoke.

Quarantined on Account of Influenza.—The town of Carlisle was quarantined, September 24, on the order of Dr. Jacob C. Geiger of the United States Public Health Service, on account of influenza, of which there were 125 cases on that date. The epidemic was traced to two sailors who had come to Carlisle on furlough from Boston. Lieut. A. M. Jones of the medical service was placed in charge of the situation by Dr. Geiger.

CALIFORNIA

Personal.—Dr. J. Perry Lewis, San Diego, who has been seriously ill is reported to be convalescent.——E. H. Meyers, Napa, is reported to have been found guilty of violating the Harrison Narcotic Law, and is said to have been ordered to pay a fine of $200 or as an alternative to be imprisoned for fifty days in the county jail.

GEORGIA

Personal.—Dr. Jarrett W. Palmer, Ailey, has been appointed a member of the state board of medical examiners for a term of four years, from September 1.

Hospital Annex Opened.—The annex to the Savannah Marine Hospital, located in the former home of Dr. William Duncan, East Oglethorpe, was opened, September 16, with accommodation for twenty-four patients.

Sanatorium Sold.—The Williams Private Sanatorium, Macon, founded by the late Dr. Howard J. Williams, formerly president of the state board of health, has been sold to Drs. Max Jackson, Olin H. Weaver, Thomas D. Walker, Jr., and Charles H. Richardson, Jr. The sanatorium will be operated under its original name.

ILLINOIS

Practicing Without a License.—Six midwives who were practicing in Joliet without a license were arrested and each of them fined $100 and costs, recently, by the Department of Registration and Education of the State of Illinois.

Infantile Paralysis.—During July and August 125 cases of infantile paralysis were reported to the state department of health from thirty counties in Illinois. Of these cases forty-seven were reported from Cook, thirteen from Kankakee and ten from Jo Daviess County.

Mandamus Petition Denied.—A report from the Department of Registration and Education of Illinois states that Judge Hebel has declined to grant the petition of the Chicago Hospital College of Medicine for mandamus against the department to compel restoration of good standing.

Personal.—Dr. H. Eugene Delavergne, Belvidere, secretary of the Boone County Medical Society, is about to move to Kankakee. The Boone County Medical Society at a meeting, September 25, presented Dr. Delavergne with a mahogany office chair.——Dr. Robert C. Mitchell, Belvidere, has been elected secretary of the Boone County Medical Society.——Dr. Philip F. Gillette, Elgin, has returned to his old position as assistant physician to the Elgin State Hospital.——Dr. Frazier N. Cloyd, Danville, has been appointed surgeon for the New York Central Lines, to succeed Dr. George L. Williamson, Danville.

Chicago

Medical College Not Suspended.—The statement published, October 5, saying that the Hahnemann Medical College and Hospital of Chicago has suspended for the duration of the war and which appeared to be based on good authority has proved to be incorrect. The college has recently received authority from the government to establish a unit in the Students' Army Training Corps.

Personal.—Dr. Henry F. Lewis resigned, September 30, as professor and head of the department of obstetrics and gynecology in the School of Medicine of Loyola University.——Dr. John E. Macklin has been commissioned captain, C. A. M. C., and has been assigned to temporary duty at the Willows Camp, Victoria, B. C.——Lieut.-Col. Ernest E. Irons, M. C., U. S. Army, on duty at Camp Custer, Mich., is reported to be ill with influenza.——Major Edmund J. Doering, M. C., U. S. Army, president of the local board of examiners for the Medical Corps of the Army, has been promoted to the rank of lieutenant-colonel.——Dr. Adolphe R. Caron has been operated on in the Passavant Hospital. He expects to enter Red Cross service in France.——Dr. H. I. Davis has been commissioned for service with the American Red Cross in France.

Illegal Practitioners Arrested.—The following violators of the Medical Practice Act, all residing in Chicago, were arrested by the Department of Registration and Education of the State of Illinois, and fined the amounts stated:

David Reeder, 5039 Cottage Grove Avenue, $25 and costs. Mr. Reeder informed the court that he was leaving Illinois for Indiana, his home state.

M. Szxzepkowski, 1610 N. LaSalle St., $25 and costs.

Roman Tzumalski 1600 N. LaSalle St., $25 and costs.

Stan Kierzek, 4758 Justine St., case dismissed on payment of costs amounting to $8.50.

Madion M. Ormsby, 20 S. Clark St., turned over to the probation court and an officer appointed to look after him. Ormsby is 76 years old and very feeble.

Michael Crawczyk, $25 and costs on a charge of violating the medical practice act by treating Charles Zuraj without a license.

MARYLAND

Personal.—Dr. Alma Rothholz, who has distinguished herself as a war worker in France, has been requested by Queen Elizabeth of Belgium to take charge of a hospital near the front for the babies of Belgium. The mission of the institution is to provide medical attention for all the babies of that stricken country.

State Hospital Train in Public Health Service.—Following a request from Surgeon-General Blue, made through the Public Health Service, the Maryland State Hospital Train was sent in less than eleven hours after the call was received to Fall River, Mass., to combat the spread of the influenza. This is the first time the train has been put into service since its equipment. The train was ready very soon after the request was received, but its departure was held up by the fact that physicians and nurses, now very scarce, could not be secured on time. Ten nurses, six from the Union Protestant Infirmary and four from the University Hospital, responded to the call and the following physicians were secured: Drs. Edgar M. Parlett, Baltimore, Calvin N. Gabriel, John W. Abbott and Thomas C. Worthington. Dr. Daniel Z. Dunott, chief surgeon of the Western Maryland Railroad, is in charge of the train.

MINNESOTA

Health Merger Bill.—At a meeting in the office of Hennepin County Medical Society, Minneapolis, September 18, the consolidation of all public health organizations under a single head was discussed. A bill providing for this consolidation will go before the state legislature this fall. The mayor and five members of the city council will be members of the board.

Personal.—Dr. Gustav A. Renz, assistant city health officer of St. Paul, who has been ill at St. Joseph's Hospital, has recovered and assumed practice.——Dr. John Sundwall, Lawrence, Kan., has been appointed health commissioner of the University of Minnesota.——A medical military unit is being formed at Rochester with Dr. Frederick L. Smith as captain and Dr. Willis S. Lemon as first lieutenant.

Course in Public Health Nursing.—The University School for Nurses at the request of the Minnesota Public Health Association, according to the weekly journal of that association for September 26, has determined to provide a four months' intensive course in public health nursing for graduates and to accredited schools of nursing for the benefit of their senior students. It has been the aim of the university school to establish a regular course in this work, but the exigencies of the war have delayed this action.

Tuberculosis Clinics.—A rural clinic was held at Fertile, September 25, by Dr. Charles H. Cole, medical director of Sunny Rest Sanatorium, Crookston, under the auspices of the advisory commission of the State Sanatorium for Consumptives. At this clinic twenty-two persons presented themselves for examination and twelve of these cases were referred to the sanatorium. Regular clinics are held every Tuesday at the Sunny Rest Sanatorium and every Thursday at Oakland Park Sanatorium, Thief River Falls, of which Dr. Cole is also medical director. At these clinics from four to eight persons come for examination each week.——A tuberculosis clinic in Renville County was held at the County Court House, Olivia, September 30, from 11 a. m. to 1 p. m., and from 3 p. m. to 6 p. m., under the charge of Dr. Abraham P. Terk of Riverside Sanatorium, Granite Falls.——A free tuberculosis clinic was conducted at the office of the health department of Eveleth, September 12, by Dr. Arthur T. Laird of Nopeming Sanatorium.——The antituberculosis committee of the Minneapolis Associated Charities at its annual meeting, September 20, voted to expend $18,000 during the coming year toward the assistance of the Red Cross in caring for returned soldiers suffering from tuberculosis; for the establishment of a Childrens' Preventorium to be located at Glen Lake; for tuberculosis dispensaries to be located in settlement houses; for two physicians to be added to the force in charge of tuberculosis clinics, and for the salary of a nurse to be added to the nurse force of the tuberculosis division of the city health department.

MONTANA

Hospital Cornerstone Laid.—The cornerstone of the new St. Vincent's Hospital, Billings, was laid with appropriate ceremonies, September 29. The building will cost about $400,000.

The Handling of Venereal Diseases.—At a meeting of the state board of health two new divisions were created for the handling of venereal diseases under the government plan. One division will have charge of the enforcement of rules and regulations, and the other will handle the publicity and education.

Personal.—Dr. John M. Scanland, superintendent of the State Hospital for the Insane, Warm Springs, has been commissioned captain, M. C., U. S. Army.——Dr. A. P. Stevenson, Roundup, has been appointed health officer of Musselshell County, to succeed Dr. George A. Lewis, who has resigned to enter the military service.——Dr. Oscar M. Lanstrum, Helena, has won the republican nomination for United States Senator from Montana.

NEBRASKA

Social Morality.—Dr. Abby Virginia Holmes, Omaha, is disposing of her practice and will devote her entire time to lectures on social morality and sex education in colleges and universities and also in communities adjacent to training camps.

Personal.—Dr. Albert P. Fitzsimmons, formerly of Tecumseh, but now treasurer of the Philippine Islands, is paying a visit to his old home.——Dr. Edward A. Hudson, Edison, is seriously ill as the result of a cerebral hemorrhage.——Dr. George M. White, Ingleside, has been appointed assistant superintendent of the Ingleside State Hospital.——Dr. Wilford H. Crutcher, superintendent of the State Orthopedic Hospital, Lincoln, has resigned to enter the military service.——Dr. Dellizon A. Foote, Omaha, was operated on at Rochester, Minn., September 18, and is reported to be doing well.——Dr. Charles W. Ervin, Lincoln, has been appointed assistant adjutant-general of the state.——Dr. Beverly A. Finkle, assistant superintendent of the Norfolk State Hospital, has been appointed superintendent of the State Orthopedic Hospital, Lincoln.——Dr. Lawrence B. Pilsbury, superintendent of the Lincoln State Hospital, has resigned to enter the military service.

NEW JERSEY

Centennial of Medical Society.—The Gloucester County Medical Society celebrated its one hundredth anniversary at Winona, September 19. The twenty-nine members of the organization were all present, together with invited guests.

Influenza at Gloucester City.—According to the board of health records of Gloucester City there were, October 4, 3,000 cases of influenza, of which 300 had developed pneumonia. The situation in the shipyards was a serious one, 600 workers being ill. Dr. D. C. Bowen of the state board of health made a survey and telephoned to the National Red Cross headquarters at Washington for six trained nurses. Three additional physicians were secured and another hospital, in the auditorium of the city hall, was opened. At Pusey and Jones (shipyards) twenty-five patients were in the temporary hospital.

Personal.—Dr. Irwin W. Kirk has been elected city physician of Millville to succeed Dr. Charles H. Mayhew, who has resigned to enter the military service.——Dr. Norman S. Garrison, Rutherford, has been elected medical inspector for the Deerfield and Lawrence township schools.——Dr. W. S. Jones, Trenton, has resigned as a member of the State Board of Charities and Correction to become commandant of the Soldiers' and Sailors' Home at Vineland.——Under the adjustment made by the state board of health, Dr. Henry A. Cotton has withdrawn his resignation as medical director of the Trenton State Hospital and will resume his duties with an increase in salary from $4,500 to $6,000 a year.

NEW YORK

The Home Touch for Medical Officers.—The Onondaga County Medical Society has issued a monthly publication known as *The Bulletin*, which will contain news items of interest to medical officers from that part of the state on duty with the American Expeditionary Forces, and so will keep them in touch with local events of interest.

Personal.—Dr. Frank Vander Bogart, Schenectady, has been appointed medical supervisor of child welfare work with the American Red Cross in Italy.——Dr. Franklin C. Gram, acting health commissioner of Buffalo, has been commissioned captain, M. C., N. Y. State Guard, and has been assigned to duty with the 65th Infantry.——Major William G. Bissell, Buffalo, M. C., N. Y. State Guard, assigned to duty with the 65th Infantry, has been selected as professor of military hygiene and sanitation in the student course to be given under the auspices of the War Department at Canisius College.

New York City

Personal.—Dr. Elbert M. Somers, Brooklyn, has entered the service of the American Red Cross as hospital superintendent in France.

Harvey Society Lecture.—The first lecture of the Harvey Society course will be given, October 19, at 8:30 p. m., by Dr. Edward K. Dunham, on "Certain Aspects of the Application of Antiseptics in Military Practice."

OHIO

Physician Fined.—Dr. Julius P. Haynes, a colored practitioner of Toledo charged with illegally furnishing habit-forming drugs, is reported to have pleaded guilty in the probate court, and to have been fined $100 and costs.

Personal.—Dr. Henry C. Eyman, because of age and failing health, has resigned as superintendent of the Massillon State Hospital after thirty-four years' continuous service in state hospitals, and has been succeeded by Dr. Arthur G. Hayde, who has been for several years superintendent of the Cleveland State Hospital.——Dr. Charles E. Sawyer, Marion, chairman of the War Savings Campaign, has been presented by the Ohio War Savings Committee with a gold medal for distinguished service.——Dr. Francis A. McCullough, Mansfield, who was operated on at the Protestant Hospital, recently, is reported to be convalescent.

Miscellaneous Health Activities.—An inspector of the state department of health reports that at Canton there are five times as many cases of tuberculosis as are being cared for or receiving attention from public health nurses. There are also many cases of trachoma in the city.——The state department has joined the United States Public Health Service in recommending that smallpox vaccination and antityphoid inoculation be required of all employees in industrial plants, on the ground that the protection of the health of employees making war munitions is just as important as that of the soldiers in the field.——The department has adopted the plan of checking disease reports against death reports to obtain evidence against physicians who fail to report communicable diseases. In this manner eleven unreported cases of typhoid fever were discovered in June. Local health departments are urged to follow a like plan with reference to reports of communicable diseases.

Recent Gifts Toward Western Reserve University Medical Group.—Two years ago a plot of land which approximated 15 acres in extent, known as the Ford Estate, was purchased as a site for the new buildings of the Medical Department of Western Reserve University and for a new Lakeside Hospital, for a babies' and for a maternity hospital. It was the plan to create a group of hospital buildings combined with the medical school to make an ideal teaching plant for the teaching of medicine. This tract is situated next to the literary departments of Western Reserve University and the Case School of Applied Science. Although the war has postponed the erection of any of these buildings, Lakeside Hospital lately received some noteworthy contributions and bequests which will materially hasten the buildings. By the will of the late Col. Oliver Payne a large and generous gift of $1,000,000 came to Lakeside to be used at the discretion of the trustees. By the will of the late Mr. W. S. Tyler, Cleveland, a trustee of Lakeside, a bequest of $200,000 was provided to be applied toward the erection and endowment of a maternity ward on the new site. Mr. Samuel Mather, president of Lakeside, opened the new building fund of the hospital by a gift of $350,000. There is also a fund held by the trustees of Lakeside for the benefit of the children's and maternity wards amounting to something over $150,000.

PENNSYLVANIA

Tuberculosis Dispensaries Close.—Dr. B. Franklin Royer, Harrisburg, acting state commissioner of health, has ordered all the 120 tuberculosis dispensaries of the department of health closed so that the nurses may be used in the general epidemic work. This is the first time in the history of the department that it has been necessary to take such a step.

Epidemic Increasing.—October 4, at Harrisburg three deaths and 1,000 cases of influenza were announced by the local board of health. Six hundred cases had been reported during the previous twenty-four hours. Churches and schools were closed.——Bethlehem reported 125 new cases within the twenty-four hours ending October 4.——No cases were reported at Lebanon, but the city was closed as a preventive measure.——In Pittsburgh, moving picture and other theaters and all public meeting places, were closed. October 4, all Liberty Loan and other public meetings were prohibited. The universities, where the students of the Army Training Corps are located, were placed under guard to insure strict quarantine.

Personal.—Dr. Samuel G. Foster, Franklin, was taken ill while performing an operation, September 18, but is now reported to be improving.——Dr. William F. Doyle, Pottsville, is ill at his home with pneumonia.——Dr. Granville H. Walker, Bellevue, who has been seriously ill at his home, is reported to be improved.——Dr. Charles M. Rickert, Millersburg, has been appointed assistant chief medical inspector for the state department of health, to succeed Dr. John J. Mullowney.——Dr. Charles J. Swalm has been elected medical inspector by the Conshohocken School Board.——Dr. Mariam E. K. Frisbie, South Williamsport, has been appointed medical supervisor of the State Hospital, Somerset, to succeed Dr. John S. Marian, who has resigned to enter the military service.

Philadelphia

Campaign for Roosevelt Hospital.—The members of the staff of the Roosevelt Hospital and their friends, September 24, began a campaign to raise $300,000, the amount needed to erect a larger, modern and fully equipped hospital in the district served by the hospital for the last fifteen years.

Beds for Sailors Endowed.—Thirty-five beds for sailors have been endowed at St. Francis Country House at Darby, which has been selected by the government as a convalescent home for men in the service. Many of these beds, the endowment of which is $100, have been given in the name of some American, who has given his life for this country.

Sails for France.—Dr. Caroline M. Purnell has sailed for France as a member of the second unit, American Women's Hospital. Dr. Purnell is also special commissioner in the American Women's Hospital in France, and her mission is to inspect the medical hospitals, and consult with the French authorities and American Red Cross, and survey the field generally.

Personal.—Dr. John A. Kolmer, who has been conducting an investigation of influenza at his laboratory in the Philadelphia Hospital, has been stricken with the disease and is confined to his home.——The following municipal appointments have been announced: Dr. T. Ruth Hartley, special inspector, board of health; Drs. Katherine Radley, Rose Harrison and Samuel Friedenburg, school medical inspectors.

Influenza Epidemic Increasing.—Within the twenty-four hours, ending at noon, October 5, 1,480 new cases had been reported with 159 deaths directly due to the influenza. In the week ending at noon, October 4, there were reported in the city 1,191 deaths from all causes. Of this number 399 were directly chargeable to influenza, 330 being adults and 69 minors. Pneumonia was the cause of the death of 229 persons, of whom 45 were minors and 184 adults; while bronchopneumonia was responsible for the death of 79 persons of whom 44 were adults and 35 minors.——By order of the board of health all schools and churches have been closed, public gatherings prohibited and the sale of liquor stopped throughout the city. Hotels, restaurants, cafes and all political clubs have been ordered to close their bars by the department of health, and retail drug stores have been permitted to sell spirituous and malt liquors only on presentation of a doctor's prescription.

VERMONT

State Society Meeting Postponed.—By order of the state board of health the program for the annual meeting of the Vermont State Medical Society, which was to have been held October 10 and 11, has been postponed.

CANADA

Canadian Medical Protective Association.—The report of the annual transactions of this body has recently been mailed to all members. The report of counsel stated that the association had been called on during the past year to assist some ten members in defending suits for alleged malpractice; in three, action has not been proceeded with; in another the plaintiff withdrew his case, and in still another the plaintiff withdrew and admitted that the conduct of his medical man had been satisfactory. No case of a serious charge against a member occurred.

Medical Society News.—The Academy of Medicine, Toronto, opened for the season, October 1, when Col. Alexander Primrose, C.B., delivered the presidential address.——The Aesculapian Club, Toronto, held its first regular meeting, Thursday evening, October 10, under the presidency of Dr. Harry B. Anderson. The Rev. Canon Gould, M.D., thirteen years a medical missionary in Palestine and Arabia, gave an address on "Palestine and Arabian Factors in the Allied Cause."——At the first open meeting of the Peterborough (Ont.) Medical Society, the evening of October 3, Drs. Richard A. Reeve and Harry B. Anderson, Toronto, were present and delivered addresses.

Blind in Canada.—There are said to be about 700 blind persons in Canada; two-thirds of these lost their sight after reaching 21 years of age. There are five schools for the blind in the dominion with more than 306 pupils. At the present time there are about eighty blinded soldiers. Recently the Canadian National Institute has been incorporated for the purpose of helping the blind. The ways they will be helped are in industrial training, with workshops and other necessary offices. It is believed that $100,000 will be required for the first year's work and $70,000 for the second. Among the blind members of this institute are Dr. Charles R. Dickson, the eminent Canadian electrotherapeutist, and Dr. Thomas Milroy, Winnipeg, Man.

GENERAL

Railway Surgeons to Meet.—The twenty-eighth annual meeting of the New York and New England Association of Railway Surgeons will be held at Hotel McAlpin, New York City, October 21, under the presidency of Dr. James S. Hill, Bellows Falls, Vt.

Dies After Long Service.—Sergt. First Class, David Robertson, Medical Department, U. S. Army, 85 years of age, who had served for sixty-four consecutive years on Governors Island, N. Y., died at his quarters, August 13, from cancer of the intestine and right kidney.

Appropriation for Combating Influenza.—Both the House and Senate have passed House Joint Resolution 333 appropriating $1,000,000 to be expended by the Public Health Service in combating influenza in the present epidemic and other communicable diseases. The money will be available until June 1, 1919, and the work is to be done in conjunction with the medical services of the Army and Navy.

Bequests and Donations.—The following bequests and donations have recently been announced:

Toronto General Hospital, $2,000 for the endowment of a bed; Hospital for Sick Children, $2,000 for the endowment of a bed, contributed by Miss W. J. Barr, Toronto.

Hahnemann Hospital and Philadelphia Home for Incurables, each $5,000 by the will of Mrs. Mary Stotesbury Crozier.

Burlington County Hospital, Mount Holly, N. J., $500, and Friends' Asylum, Frankfort, a sum for the erection of a memorial cottage, by the will of Margaret H. Jones.

Physicians of Southwest to Meet.—At the annual meeting of the Medical Association of the Southwest to be held in Dallas, October 15 to 17, under the presidency of Dr. Edward H. Martin, Hot Springs, Ark., a special war program will be presented. Lieut.-Col. Harry Mock of the Surgeon-General's Office will speak on "The Reconstruction Work as Planned by the Government." The American Red Cross, the Public Health Service, the Pure Food Department and the Council of National Defense will also be represented at the meeting.

Tuberculosis Conference.—The North Atlantic Tuberculosis Conference, representing the states of New York, New Jersey, Pennsylvania, Delaware, District of Columbia, Maryland, Virginia and West Virginia, will be held at the William Penn Hotel, Pittsburgh, October 17 and 18, under the auspices of the National Tuberculosis Association. Dr. Thomas McCrae, Philadelphia, is president, and the program is in the main devoted to the discussion of tuberculosis war problems. The chief topics announced are: "Health Education of the Civilian Population in War Times," "The Need of Adequate Tuberculosis Programs in War Times," and "Adequate Care of Tuberculous Soldiers."

Meeting of American Public Health Association.—The annual meeting of the American Public Health Association will be held at the Hotel Morrison, Chicago, October 14 to 17. There are six sections and a general meeting. The president is Dr. Charles J. C. O. Hastings of Toronto. In the sociologic section there will be interesting round table discussions on the effect of the high cost of living on the public health, the relation of wages to public health, the reconstruction of hospital and dispensary organizations for increased social efficiency, and a discussion on what adjustment in health administration must be made as a result of war conditions. Among the speakers slated to be present are Surg.-Gen. William C. Gorgas, Col. Victor C. Vaughan and Major William H. Welch of the Army Medical Corps, and President George E. Vincent of the Rockefeller Foundation. Surg.-Gen. Rupert Blue of the Public Health Service has also agreed to be present and will discuss President Wilson's executive order placing special war health activities as affecting the civilian population under the supervision of the Secretary of the Treasury. The entire session, Tuesday evening, October 15, will be devoted to the discussion of these war measures. The preliminary program of the meeting will be found in full in *Public Health Reports,* Sept. 20, 1918, and the war program of the Public Health Service, which is to be presented for discussion at the meeting, will be found in *Public Health Reports,* Sept. 27, 1918.

FOREIGN

Deaths in the Profession Abroad.—Dr. **R. Saundby,** emeritus professor of medicine at the University of Birmingham, a former president of the British Medical Association, aged 79. His book on medical ethics reached a second edition in 1907, and he had a wide reputation as a clinician, administrator and author.——Dr. **Margaret Todd,** medical officer to the Edinburgh Hospital for Women and Children, known as a writer under the pseudonym "Graham Travers."——Dr. **J. Vera,** a neurologist and alienist of Madrid, member of the board of the Beneficencia provincial.——Dr. **A. Mendoza,** the pioneer in microphotography in Spain, chief of the laboratory of the Beneficencia provincial and of the scientific institute in charge of Cajal. He took a prominent part in stamping out epidemics of cholera in 1884 and later.

SOUTH AND CENTRAL AMERICA, MEXICO AND WEST INDIES

Circulating Library Founded to Add to Hospital Fund.—At Bogota a circulating library has been founded to aid Hospital San José. Books are donated and the fees for circulation are given to the hospital.

Elections of Officers.—The Sociedad de Cirugia of Bogota at its recent annual meeting elected Drs. L. C. Marquez, president; M. Rueda, secretary, and Dr. H. Machado, director of the work of the Hospital de San Jose.——The Sociedad de Pediatria elected Dr. J. M. Montoya, president, and Dr. J. Bejarano, secretary. The Club Medico, Dr. M. A. Iriarte, president; Dr. C. J. Lopez, secretary.

Buildings for the Medical School in Colombia.—The *Repertorio* of Bogota hails the inauguration of the new pavillions for the study of anatomy, histology and pathologic anatomy, which are to serve as the basis for the equipment for the study of medicine in the republic of Colombia. It states that a new era for the study of medicine is opening in the country, and the men who are to be thanked for it are Drs. L. C. Marquez, president of the Academia Nacional de Medicina, H. Machado, rector of the medical faculty, and P. Martinez. They have accomplished what others regarded as a dream incapable of realization.

MEXICO LETTER

Mexico City, Sept. 23, 1918.

Eighth Anniversary of Founding of University

As yesterday was the eighth anniversary of the founding of the National University here, it was celebrated with a musical-literary ceremony in the morning, in the amphitheater of the National Preparatory School, attended by all connected with the university. Addresses were made by the rector of the university, Dr. J. N. Macies, who spoke in Latin. After these ceremonies a portrait of the late Dr. J. E. Liz, LL.D., who was the first rector of the university, was placed in the rector's office.

At noon a banquet with 150 covers was served in the Chapultepec restaurant, the rector presiding, with the members of the university faculties, the professors and a number of alumni. Among the guests were Mr. H. P. Fletcher, the ambassador from the United States, the Duke de Amalfi, the minister from Spain, and also the ministers from Uruguay and Nicaragua, the president of the city council, and other dignitaries. The culminating note of the conviviality was the toast that the American ambassador offered, expressing his desire to work for the interchange of university professors and students between Mexico and the United States. Señor Fletcher's address, frank, loyal and cordial, elicited enthusiastic "vivas" for the American Union, Spain and President Wilson.

The National University of Mexico was founded under the auspices and patronage of the Universities of California, Oviedo (Spain) and Paris.

Regulation of the Practice of Medicine

The legislature of the state of Jalisco has passed laws regulating the practice of the profession in that state. Before entering on practice in Jalisco, a professional degree is now required of lawyers, physicians, pharmacists, engineers, veterinarians, obstetricians and dentists. These requirements are to be enforced under penalty of fine or imprisonment, except that at points where there are no qualified persons the practice of lay persons will be tolerated. Holders of degrees from foreign schools will have to present their diplomas for verification or submit to an examination. The president of the state has not yet signed the law. Jalisco is the first state in Mexico to enact any law of the kind in this matter, which is of such transcendental social importance. Elsewhere in the country there are no legal restrictions on the practice of unqualified practitioners of medicine and other professions.

Personal

At the request of the rector of the National University, Dr. N. Leon has been appointed the representative of Mexico in the Congreso de Americanistas, which is to convene at Rio de Janeiro in June, 1919. Dr. Leon is professor of anthropology at the National Museum, and has been the official representative of Mexico at various American international gatherings. He is a pupil of Prof. A. Hrdlicka of Washington, and is known in the scientific circles of the American Union.

Dr. T. G. Perrin has been elected a member of the Pedro Escobedo Medical Society, and his inaugural address was entitled "Our Attempts at Bacteriotherapy." It made a good impression. Dr. Perrin is a pupil of Cajal, and is a distinguished Spanish pathologist and bacteriologist who has been residing here for several years.

Dr. F. C. Najera has returned from New York, where he has been on an official commission, and has resumed charge of the Juarez Hospital.

BUENOS AIRES LETTER

Buenos Aires, Aug. 24, 1918.

Epidemic of Typhus

The sanitary commission in charge of Professor Kraus of this city has established the existence of an epidemic of typhus in the provinces of Salta and Jujuy. In 1916 a commission, composed of Drs. Neiva and Barbará, had observed a clinical case and collected data testifying to the existence of this disease, until then not known certainly in Argentina, although it is known in Peru, Bolivia and Chile. Before this there had been only a suspicion of the existence in Argentina of a small epidemic among some recently arrived Russians a few years ago. The data collected by the commission now prove that typhus exists in almost an endemic form in the mountainous and scantily populated provinces of Salta and Jujuy. In the town of Molinos there have been numerous cases, with fourteen deaths among the sixty cases encountered by Dr. Fernandez who was sent to combat the epidemic. At Mendieta (Jujuy) there were four deaths in nine cases, but the general mortality to date seems to have been about 20 per cent. The reason why this disease has not been recognized before was because the endemic foci are in such remote and almost uninhabited regions far from the towns and railroads.

Changes in University Staffs

The conflict that has been going on in the University of Cordoba has grown more acute. The rector and several of the members of the faculties have presented their resignations. The head of the national government has appointed the minister of public instruction to take charge of the matter personally, and reorganize the staff of the university. At the request of the minister of public instruction, the medical faculty of the university of Buenos Aires did not appoint a new dean at the close of the term of office of Dr. Bazterrica, and this post is filled provisionally by the member of the university council who has been longest in office, Dr. E. Canton, until the reorganization of the university statutes has been sanctioned.

Professor of Pathologic Anatomy

Dr. J. Llambias, at present the *intendente municipal* of the city of Buenos Aires, has been appointed professor of pathologic anatomy in the faculty of medicine of the University of Buenos Aires.

PARIS LETTER

Paris, September 12, 1918.

Campaign Against Malaria

In a previous letter mention was made of an important communication by Dr. Marchoux, physician-in-chief of the Place de Paris, on the campaign against malaria (The Journal, Sept. 15, 1917, p. 926). Marchoux insisted particularly on the fact that systematic microscopic examinations of the blood would reveal the parasites of malaria two or three days before the appearance of the febrile attack, and the patient could then be sterilized by the administration of a few grams of quinin. As a matter of fact, hospitalization is not the solution of the question, for the majority of malaria patients need care only during the paroxysms, which occur at irregular intervals. The hospitals should not be filled up by men who do not need constant care. On the other hand, these men cannot be returned to military duty because they may be incapacitated by an attack at any time. The solution of this problem has been found by the creation of the antimalaria dispensary of the Pasteur Institute. This dispensary will keep these patients under observation during the period of development of the hématozoon, making frequent examinations of the blood, so that the appearance of the next paroxysm may be anticipated and be prevented by a prophylactic dose of quinin. If it is possible to check the paroxysms and the multiplication of the hematozoon which is the direct cause of the attack, the patient will have to deal with only one generation of hematozoa, diminished in numbers and in virulence, and thus an important step toward a cure will have been taken.

The dispensary has been installed in a large hall of the hospital of the *centre de réforme* at Vaugirard. It is provided with a series of small stalls separated by wooden partitions, and here come, at the day and hour specified, the patients who are under treatment. The microscopic examination of the blood is made by a group of young army physicians who are specializing in this work. All the other work which is to be done in this department is assigned to Red Cross nurses. Ordinarily a blood examination would consume much time, but by resorting to the so-called "thick drop" method, *la goutte épaisse*, with the hemoglobin removed, first proposed by Ronald Ross and perfected by Tribondeau, these examinations can be made very quickly.

The essential feature of this antimalaria dispensary is the fact that the patient is not hospitalized. The Service de Santé is not put to any expense. The malarial soldier is placed where he can be of most service; he may be placed in the auxiliary service, but, as a rule, he works at his trade in Paris. Therefore, he is not unproductive during the course of his treatment.

Campaign Against Poisonous Gases

For the purpose of instituting proper measures to combat the toxic or poisonous gases used by the Germans, especially the gas known as mustard gas or "ypérite" (so named because it was used for the first time at Ypres), a bathing and cleansing service has been organized by the Service de Santé militaire. It has been discovered that if the victims of these vesicating gases, like "ypérite," are given a bath and proper care within three hours after exposure to the gas, complications will not, as a rule, occur.

Each section for the disinfection of clothing and the douching of the gassed is mobile. It consists of a motor lorry or truck and a trailer. The truck transports the tent, the douche or bath apparatus, floor boards and other necessary accessories. The trailer carries a stove to disinfect the clothing. The whole outfit can be set up very quickly, and it operates in a very simple manner. The men undress in a part of the tent, separate from the bathing outfit. Their clothing is placed in the disinfecting apparatus while they are bathing, and on leaving they receive their clothing which has been freed of every trace of "ypérite." Forty men at a time can be douched; one hundred can be taken care of in an hour by one outfit. The Service de Santé intends to supply each division with one of these outfits.

There has also been organized a special clinic for the treatment of gas victims. This clinic is installed in the school of commerce (hôpital auxiliaire 101 de l'Union des Femmes de France), and is under the scientific direction of Dr. Ch. Achard, professor of pathology and general therapeutics in the Medical Faculty of Paris. This is at the same time a hospital where the gassed are given treatment and where army physicians are instructed in the methods of treatment applicable to these cases of gas poisoning. A research laboratory is attached to the hospital.

Mumps

At a recent session of the Académie de Médecine, Dr. Capitan read a very interesting paper based on his observation of 700 cases of mumps treated in his contagious disease service at the Hôpital militaire Bégin since the beginning of the war. Capitan directed special attention to a new sign, one which he has never failed to find, namely, a very distinct enlargement of the spleen appearing with the onset of the disease and disappearing at its termination. He has also seen in some cases a generally distributed reddish eruption which disappeared in the course of convalescence. Sometimes, though rarely, symptoms are present of irritation of the meninges at the base of the brain; they are not severe and disappear after eight or ten days. Capitan has observed one case of severe cerebrospinal meningitis as a sequel of mumps, but it terminated in recovery.

The Clinical Thermometer

A law has been passed which provides that after nine months no clinical thermometers can be delivered, placed on sale or sold without having first been subjected to verification. Each instrument must bear the name of its manufacturer and after verification it should be suitably stamped, bearing also the date of inspection. Infringements of this law will be punished in the same manner as the use of false weights or measures (a fine of from 11 to 15 francs); furthermore, the instrument will be seized and confiscated. Repetition of the offense will incur a fine of from 50 to 100 francs. In case of false branding, the culprit will be punished by imprisonment of from six months to five years.

Repatriation of Interned Persons

Word has been received from Geneva that the repatriation of the French interned, which has been interrupted for several weeks because of an epidemic of grip prevalent in Switzerland, will be resumed in the usual manner.

Evacuation of the Wounded by Waterways

On account of the difficulty of transportation of the wounded from certain sectors by hospital trains, the Service de Santé militaire has for some time been considering the establishment of a waterways transport for the evacuation of the wounded. However, no definite steps were taken to establish this transport without due consideration of all factors involved. During the recent battles more than 4,000 wounded were transported by water under the best conditions. Orders were issued to make a study of the waterways available for transport between the Oise, the Aisne and the Marne, and to provide the boats needed for such service. The wounded were far more comfortable in the boats than in the trains, which more than compensated for the longer time required to evacuate them. It is necessary, however, to equip the boats in such a manner that operations may be performed as is now done in the ambulances.

Deaths

Capt. George Shrader Mathers, M. C., U. S. Army, Chicago; Rush Medical College, 1913; a son of Dr. William R. Mathers, Prosper, Texas; a Fellow of the American Medical Association; died in Baltimore, October 5, of pneumonia; aged 31. Captain Mathers was a member of the staff of the John McCormick Institute for Infectious Diseases where he had done notable work in isolating the streptococcus in the nervous system in poliomyelitis, in studying the streptococci involved in acute epidemic respiratory infections in man and in studying a remarkable streptococcus epidemic in horses; also in an extensive study of meningitis in one of the military establishments. He entered the service as a lieutenant in March, 1918, and was stationed at Washington, D. C., at Newport News, Va., and finally as director of the laboratory in the base hospital at Camp Meade, Md. It was while working on material in connection with the present epidemic of influenza and the secondary pneumonia that Captain Mathers became a victim of the disease.

Died in the Service

Capt. George S. Mathers, M. C., U. S. Army, 1887-1918

Capt. Charles Henry Gallagher, M. C., U. S. Army, Ithaca, N. Y.; University of Syracuse, N. Y., 1896; aged 42; a Fellow of the American Medical Association; a specialist in anesthesia; whose military service commenced with a tour of duty at Fort Oglethorpe, Ga., when he was ordered to a replacement battalion at Allentown, Pa., and sailed to England, and then to France, where he was a member of the staff of Base Hospital No. 202, Orleans, France; died in that institution, August 28, from bronchial pneumonia.

Wilbur Alson Hendryx, New York City; Rush Medical College, 1874; aged 69; formerly a practitioner of Grand Rapids, Mich., and lieutenant-colonel in the Michigan National Guard; donor of a bacteriologic laboratory to the Medical College of Southern California, Los Angeles; more recently interested in mining; said to have been the inventor of the cyanid process of separating metal from ore, and of many types of mining machinery now in general use; died suddenly in Allentown, Pa., September 21.

Capt. Rae Wyant Whidden, M. R. C., U. S. Army, New York City; Harvard Medical School, 1911; aged 33; a Fellow of the American Medical Association and New York Academy of Medicine; a specialist in diseases of the lungs; visiting physician to Bellevue Hospital, assistant physician at the Presbyterian Hospital Dispensary and assistant surgeon to the Manhattan Eye, Ear and Throat Hospital; died at the Massachusetts General Hospital, Boston, September 25, from pneumonia, following influenza.

Col. Charles E. Doerr, M. C., U. S. Army; Medical College of Ohio, Cincinnati, 1906; aged 35; a Fellow of the American Medical Association; commandant of the Base Hospital at Camp A. A. Humphreys, Accotink, Va.; who entered the Medical Reserve Corps in 1908; was made first lieutenant, Medical Corps, in 1909, and promoted to captain, Medical Corps, in 1912; died at Camp Humphreys, October 3, from pneumonia, following influenza.

Uriah Newton Mellette, Bellingham, Wash.; Eclectic College of Medicine and Surgery, Cincinnati, 1858; aged 83; at one time a member of the Oklahoma State Medical Association; formerly a member of the Florida State Board of Health, and a member of the Oklahoma State Board of Pharmacy; was killed accidentally by a train in one of the tunnels of the Great Northern Railway, near Bellingham, September 22.

Lieut. John Lee Fisher, Assistant Surgeon, U. S. Navy, Wilmington, Del.; Hahnemann Medical College, Philadelphia, 1912; aged 30; a Fellow of the American Medical Association; who entered the naval service, Nov. 17, 1917, and was assigned to duty on the U. S. S. Kearsarge; died, September 24, in the U. S. Naval Hospital, Chelsea, Mass., from influenza.

Thomas William Kohr, Robertsdale, Hammond, Ind.; New York University, New York City, 1884; aged 75; a member of the Indiana State Medical Association; secretary and president of the board of health of Hammond from 1902 to 1905; proprietor of the Robertsdale Pharmacy; died at his home, September 20, from cerebral hemorrhage.

Lieut. Walter Irenaeus Ryder, U. S. N. R. F., Newton, Mass., and Boston; Tufts College Medical School, Boston, 1913; aged 29; a Fellow of the American Medical Association; stationed at the U. S. Navy Radio School, Harvard; died at his home in Newton, September 24, from bronchopneumonia, following influenza.

Capt. Cecil Goodard Morehouse, M. R. C., U. S. Army, Waukon, Iowa; State University of Iowa, College of Homeopathic Medicine, Iowa City, 1913; aged 30; a member of the Iowa State Medical Society; who had been on duty on the Western Front in France, is reported to have been killed in action, recently.

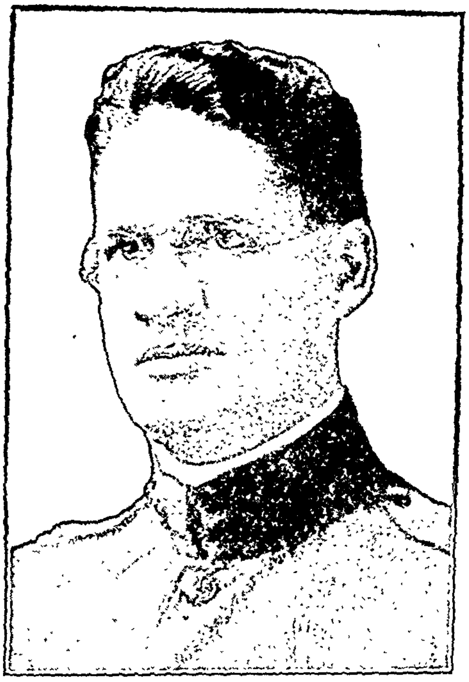
Lieut. Edward James Ware, M. R. C., U. S. Army, New York City; College of Physicians and Surgeons in the City of New York, 1885; aged 59; a Fellow of the American Medical Association and New York Academy of Medicine; visiting surgeon to the Bloomingdale Clinic; died at his home, September 30.

Carrie A. Frost, Almond, Wis.; Northwestern University, Womens' Medical School, Chicago, 1898; aged 53; a Fellow of the American Medical Association; for many years attending physician to the Home for Incurables, Chippewa Falls, Wis.; died at her home, September 22, from tuberculosis.

James Morgan Hurley, San Bernardino, Calif.; Cincinnati College of Medicine and Surgery, 1865; aged 75; at one time a Fellow of the American Medical Association; assistant surgeon, U. S. Army, during the Civil War; for several years health officer of San Bernardino; died at his home, September 25.

Marland Cooper Eaton, Beverly, Mass.; Tufts College Medical School, Boston, 1906; aged 33; formerly a member of the Massachusetts Medical Society; at one time a member of the board of health of Wenham; died at his home, recently, from pneumonia, following influenza.

Butler Presson, Seattle; aged 87; at one time a member of the Grant County (Ind.) Medical Society; a pioneer practitioner and clergyman of the state of Washington; a veteran of the Civil War; died at the home of his daughter in Seattle, August 12, from senile debility.



Died in the Service
IN FRANCE

Major William B. Hudson, M. C., U. S. Army, 1870-1918

(See The Journal, last week, p. 1157)

Lieut. Gilbert Mord Newburger, U. S. N. R. F., Philadelphia; Medico-Chirurgical College of Philadelphia, 1905; aged 38; a Fellow of the American Medical Association; on duty at the Philadelphia Naval Hospital; died in that institution, September 27, from pneumonia.

William B. Bullard, Los Angeles; Bowdoin Medical School, Brunswick and Portland, Me., 1859; aged 89; at one time a

Fellow of the American Medical Association; a member of the Medical Society of the State of California; died at his home, September 23.

Emory J. Walker, New Haven, Conn.; Hahnemann Medical College, Chicago, 1868; aged 73; one of the founders of Grace Hospital, a charter member of its board and secretary of the institution since 1889; died at the home of his son in New Haven, September 9.

George William Yeaton, Milford, Mass.; Dartmouth Medical School, Hanover, N. H., 1902; aged 40; at one time a Fellow of the American Medical Association; a member of the Massachusetts Medical Society; died at his home, September 27, from influenza.

Phillip Townsend Buckley, Boston; Harvard Medical School, 1884; aged 58; a member of the Massachusetts Medical Society; died at his home, September 19, from pneumonia, following influenza.

Abraham P. Williard, Kirksville, Mo.; University of Maryland, Baltimore, 1850; aged 92; surgeon of U. S. Volunteers during the Civil War; died at his home, September 11, from arteriosclerosis.

Francis Joseph Colgan, Colorado Springs, Colo.; L.R.C.P. (Ireland), L.R.C.S. (Ireland), 1910; aged 32; died at a sanatorium in Colorado Springs, September 11, from pulmonary tuberculosis.

Herbert Abraham Hands, Cambridge, Mass.; College of Physicians and Surgeons, Boston, 1882; aged 66; died suddenly in Somerville, Mass., September 18, from heart disease.

Henry C. Carpenter, Lake Odessa and Howard City, Mich.; Homeopathic Hospital College, Cleveland, 1868; aged 82; died at farm home, near Howard City, September 13.

Francis Winfield Sapp, Columbus, Ohio; College of Physicians and Surgeons, Baltimore, 1882; aged 64; died at his home, September 20, from arteriosclerosis.

Whitfield Tillison, Eloise, Mich., formerly of Detroit (license, Michigan, years of practice, 1900); aged 80; died in the county house, Eloise, September 3.

S. Dawson Good, Ashtabula, Ohio; University of Wooster, Cleveland, 1892; aged 50; died at the home of his father in Ashtabula, September 15, from nephritis.

James Leander Forsythe, Lewistown, Ohio; Cincinnati College of Medicine and Surgery, 1875; aged 69; died at his home, September 14, from paresis.

C. W. Knickerbocker, Cedar Falls, Iowa; Hahnemann Medical College, Chicago, 1882; aged 60; died in Chicago, September 14, from heart disease.

Edward J. Buckley, Oak Park, Ill.; Rush Medical College, 1904; aged 40; died at the home of his parents in Lombard, Ill., September 24.

Marc Aurele Trudeau, Lowell, Mass.; University of Vermont, Burlington, 1899; died at the home of his brother in Canada, September 7.

William M. Safley, Townsend, Mont.; College of Physicians and Surgeons, Chicago, 1885; aged 60; died at his home, September 5.

N. A. McCoy, Jackson, Tenn.; Memphis (Tenn.) Medical College, 1855; aged 86; died at his home, September 9.

Josiah B. Custer, Bismarck, Ark. (license, Arkansas, 1903); aged 56; died at his home, September 17.

Marriages

Capt. Charles Watkins Brown, M. C., U. S. Army, Nashville, Tenn., on duty at Vancouver Barracks, Wash., to Miss Anna Murphey of San Diego, Calif., at Portland, Ore., September 10.

Lieut. Michael Francis McGuire, M. R. C., U. S. Army, Chicago, to Miss Rhea F. Ferrin of Jamestown, N. Y., September 25.

Lieut. Ralph Averill Gowdy, U. S. N. R. F., Minneapolis, to Miss Vera M. Unumb at Alexandria, Minn., September 16.

Henry Augustus Peters, Oconomowoc, Wis., to Miss Emma Nicolaus of Fort Atkinson, Wis., September 17.

George Girdwood Pearce, New Bedford, Mass., to Miss Elsie Bruce Jenney of Hyde Park, Boston, recently.

Glen Godfrey Gordon, Baker City, Ore., to Miss Josephine Beaudoin of Joseph, Ore., September 7.

Correspondence

FRIENDLY SOCIETIES AND THE AUSTRALIAN PROFESSION

To the Editor:—I have been directed to inform you of the dispute that has been in existence for some months between the Friendly Societies of Victoria and the British Medical Association.

The lodge doctors have been paid for the past forty years on an average as little as 14s. per annum for the town; this includes attendance on the member and his family and works out at four persons for each member; for the country the average is 16s. per annum per member for the lodge doctor.

For a considerable period of time we held negotiations with the associated lodges called the "Friendly Societies Association" with a view to having the rate of remuneration increased. As the Friendly Societies refused our demands, 100 per cent. of the town members and 96 per cent. of the country members of the British Medical Association on the 31st of last October gave three months' notice of their intention to resign their appointments on the 31st of January of this year and asked for reappointment on the terms of a model lodge agreement that had been drawn up. The Friendly Societies Association refused our terms and established institutes at which the institute doctor was asked to attend from 3,000 to 5,000 patients. The government of the day was asked by the Friendly Societies to take a hand in settling the dispute. The commissioner found that the terms asked for by the British Medical Association were just and equitable. Both sides expressed their willingness to accept the finding of the Royal Commission; but the British Medical Association made it a condition that the institute which had been established should be abolished. They were unwilling to see their men sacrificed for their loyalty to the association in that they had tendered their resignations and were to be left without any means of livelihood should the commissioner's findings be accepted unconditionally.

The lodges are endeavoring to extend their institutes, but find a difficulty in procuring medical practitioners. One of our most bitter opponents, the late president of the Friendly Societies Association, Mr. Samuel Mauger, is now on his way to Canada; and it was stated in Parliament that he purposes securing 1,000 medical officers from America to fill the positions of lodge medical officers vacated by the members of the British Medical Association in what was termed by the commissioner to be "a just demand." The institute doctors are ostracized by other members of the medical profession and are not met in consultation.

My council would esteem it a favor if you would put a "warning notice" in The Journal advising any medical practitioners in your country who might think of applying for any of the positions which might be advertised in your daily newspapers that they should first of all apply for information. By so doing you would be conferring a great favor on our association.

C. Stanton Crouch, Secretary,
Victoria, Melbourne, Australia.

ANESTHETISTS AND ANESTHETIC TECHNICIANS

To the Editor:—A gradually increasing misconception of the art of anesthesia has led to a rather unique condition of affairs.

We find that nurses and other lay persons may, by the simple acquisition of a few rules, become anesthetists. Large institutions have adopted the nurse anesthetist on grounds of economy, expediency and even sentimentality. It is argued that these workers can be employed at little expense, that the supply meets the demand, and that the feminine element eliminates fear and works for smoothness during the induction of the anesthesia.

These institutions may employ lay persons to take their roentgenograms and to make urinary, blood or sputum examinations, but does any one dream of speaking of these workers as the hospital roentgenologist or the attending pathologist? They are employed as technicians. The nurse who administers an anesthetic is an anesthetic technician. She can never be more without a medical degree, for in order to understand the language of anesthesia one must have intimate acquaintance with anatomy, physiology, medicine, surgery, diagnosis, psychology and special branches.

The nurse who in discussion with a medical man attempts to defend a theory relating to anesthesia cannot fail to feel the presumption of it and, if graced with wit, to see the absurdity of such a position. Yet it has actually come to pass that medical men have suffered themselves to be instructed by a nurse in the theory and practice of anesthesia.

In justice to an important branch of surgery and to our medical confrères who devote their training and their energy to its development, let us drop the term "anesthetist" as applied to its nonmedical workers and adopt the term "anesthetic technician."

Paluel J. Flagg, M.D., New York.

A PHYSICIAN'S FINANCES

To the Editor:—I do not believe that advertising in a daily newspaper and in the physician's waiting room, and the sale to the highest bidder of his unpaid accounts, as advocated by physicians and noted under "Editorial Comments" in the September issue of the *Journal of the Michigan State Medical Society*, is the proper remedy for people who do not pay their physician. A more radical one is needed. Since the physician must consummate one of the great fundamental instincts of human life, that of self-preservation, or making a living, why not strike at the root of the evil, calling a spade a spade, and not beat around the bush? The health of the physician, which is his greatest asset, suffers by the fatigue of long hours in trying to conserve human life. He responds to the public's call the entire twenty-four hours of the day, while even the common laborer has the law's protection to work no more than eight—the physician being the only worker who wears himself out for people who do not pay.

A political board or the claim adjuster of an insurance company should not be permitted to fix a doctor's fee. The individual who fails to pay his physician a small fee for saving his life will pay a lawyer thousands of dollars to be saved from the penitentiary.

To keep himself efficient the physician requires both money and recreation; hence he should take the honest, fearless course, demanding spot cash payment or giving no service. Those who declare this remedy too harsh or drastic should remember that the physician has suffered long from the moth-eaten abuse, and because patients will not protect him he must protect himself unless he wants to qualify as a medical missionary. The public can profitably have a law enacted that will be a protection in case of illness not only against the overworked general medical practitioner, but also against the weary medical specialist who employs inexperienced assistants to care for his great swarm of patients—this law to limit the amount of work the physician undertakes, because beyond a certain point, as his practice increases, his efficiency to the ill diminishes.

I am of the opinion that, eventually, in the interest of both physician and patient, the state will not only graduate the physician but will support him after graduation with a just compensation—one that will be great enough to guarantee him, not only a living, but also professional necessities for which, under the present system, it is his lot to struggle.

I have been in the general practice of medicine since 1890 on the site of my birthplace in Detroit, treating patients from all sections and classes of the city. For the twenty years ending Dec. 31, 1909, during which time I treated every ill patient that applied, only 2 per cent. paid promptly, and 60 per cent. failed to pay me anything. Profiting by this experience, on Jan. 1, 1910, I adopted my present rule, to ask every new patient before he receives service if he can pay my fee. If his reply is negative he is told that I carry no accounts with strangers and that he must seek treatment from the Detroit Public Welfare Commission free medical clinics and dispensaries, or elsewhere. For the eight and a half years ending June 30, 1918, of my total number of new patients, 47 per cent. were refused treatment, the balance paying cash and obtaining my services. Expenses dropped with diminished business, leaving my average net income per month for this period 276 per cent. more than my average net returns per month for the preceding twenty years, although it was an amount not more than that earned by the average Detroit salaried layman. The rule gives me more time for refreshment, reading and sleep—all needed to make for physical and mental efficiency in serving such of the ill as apply who are willing to pay promptly. I need not say that dead beats, deliberate grafters and delinquents make a rigorous howl against my business methods, although I treat all applicants known to be honest indigents free of charge.

Because of my experience of nearly thirty years, I recommend to physicians who have not medical missionary ambition, instead of the "schemes" above mentioned and pending the time when they will be paid out of the annual public tax budget, that they do a strictly cash business with patients whose credit is not known to be first class—the honest indigents alone excepted—and to require those with such good credit to keep their accounts paid up at least every thirty days.

John Linn Irwin, M.D., Detroit.

ENTEROCOLOSTOMY FOR ACUTE OBSTRUCTION OF THE TERMINAL ILEUM FROM INFECTION IN THE PELVIS AND LOWER ABDOMEN

To the Editor:—In his article in The Journal, Sept. 7, 1918, Dr. B. M. Anspach recommends an enterocolostomy for acute obstruction of the terminal ileum caused by infection in the pelvis, and cites clinical results. I am heartily in accord with his report and wish to emphasize my opinion by citing an article I wrote in the *Boston Medical and Surgical Journal* (1913, **169**, 313) in which I advocated this identical procedure for just such obstructions and reported three successful cases. Since then I have had four more, one in a child aged 4 years, all successful. I had operated on my first three patients previous to an article by Cheever (*Boston Medical and Surgical Journal* (1913, **168**, 719) in which he first described this type of obstruction of the terminal ileum from suppuration in the pelvis, the condition in his cases and mine being due to the appendix. He advocated enterostomy, which proved fatal in two out of three cases reported.

W. Sampson Handley (*British Journal of Surgery*, 1915, **3**, 157) reports a similar condition, in addition a portion of the pelvic colon being obstructed by this inflammatory exudate, two areas of the intestine involved, to which he aptly applies the term "ileus duplex." He advocated ileocolostomy if the anastomosis could be performed below the area obstructed, and if that was impossible, to perform an ileocolostomy above the obstruction in the colon and in addition a cecostomy to drain the contents of the colon and ileum.

A colostomy or enterostomy for an obstruction is often a life-saving procedure and no doubt is not performed frequently enough; but when an anastomosis of the obstructed intestine to a point low in the colon, where absorption is nil, can be performed, with results equally as good, it is to be advocated in preference to drainage to the surface, which not only is an additional care but requires a second operation for its closure.

Dr. Anspach's report is interesting and confirms a procedure which I believe I was the first to report in August, 1913.

C. A. Roeder, M.D., Omaha.

Dispensary as a Social Agent.—The province of the dispensary is extending far beyond the clinic walls, until it now reaches out into the community as a public agent. This is the need which has brought about a readjustment by the injection into the operation of dispensaries social service principles and public welfare interests.—Lucy C. Catlin, The Hospital as a Social Agent in the Community.

Book Notices

Nerve Wounds: Symptomatology of Peripheral Nerve Lesions Caused by War Wounds. By J. Tinel, Preface by Professor J. Dejerine. Authorized Translation by Fred Rothwell, B.A.; Revised and Edited by Cecil A. Joll, M.B., M.S., B.Sc. Senior Surgeon Richmond Military Hospital, Cloth. Price, $4.50. Pp. 317, with 323 illustrations. New York: William Wood & Co., 1917.

This work has been prompted by the great number of nerve wounds produced by war injuries. There were 639 cases which formed the basis of this study, and of these, 408 involved the upper and 231 the lower extremities. A brief synopsis on the character of the injuries, the changes that take place in the nerve, degeneration and regeneration, and the formation of neuromas and pseudoneuromas forms the opening part of the first chapter. The general subject is then subdivided into four parts. Part 1 is devoted to a general survey, and consists of five chapters, on nerve lesions in war wounds, clinical examination of a nerve, electrical examination, clinical types, and general diagnosis of peripheral nerve lesions. Part 2 deals with the nerves of the upper limb and Part 3 with those of the lower limb. Part 4 presents the conclusions, some of which are interesting and may be mentioned:

> We are justified in affirming that the prognosis of peripheral nerve lesions is, on the whole, favorable.
>
> Every peripheral nerve affected by traumatism tends to regenerate.
>
> Widespread destruction of peripheral nerves is also repairable by nerve grafting.
>
> Nerve suture practiced under favorable condition almost invariably succeeds.
>
> Early intervention does not appear to be an indispensable condition; we have witnessed the success of nerve sutures practiced thirteen and fifteen months after the wound.

The author, by reason of his large experience in war injuries, has been able to present in this work a valuable contribution to our knowledge of traumatic nerve lesions.

Fibroids and Allied Tumours (Myoma and Adenomyoma): Their Pathology, Clinical Features and Surgical Treatment. By Cuthbert Lockyer, M.D., B.S., F.R.C.P., Vice-President Obstetrical and Gynaecological Section, Royal Society of Medicine. With an Introductory Notice by Alban Doran, F.R.C.S., Consulting Surgeon to the Samaritan Free Hospital for Women. Cloth. Price, $25. Pp. 603, with 316 illustrations. New York: The Macmillan Company, 1918.

Dr. Lockyer has had an extensive experience, both as a clinician and as a gynecologic pathologist, during many years of work in the Samaritan Hospital, London. This volume embodies his own observations, as well as those of many other prominent workers, and may be regarded as the latest and most important work that has been written on the subject. The book consists of three parts, considering, respectively, myoma, adenomyoma and operative measures. It is illustrated in the most comprehensive manner, and both text and drawings are highly creditable to the publishers; indeed, it is one of the finest medical publications that has been produced in Great Britain in recent years.

An elaborate analysis of the work is not possible within the limits of a review article. It is a great storehouse of observations, theoretical considerations occupying but a small portion of the contents. In Part I, on secondary changes in myoma, full consideration is given to malignant complications, the author having no doubt as to the possibility of malignant transformation of the myoma cell. He points out that while sarcomas of connective tissue origin are either spindle-cell or round-cell those of muscular origin are invariably spindle-cell. Regarding hyaline degeneration, he states that this condition is often a precursor of or intimately connected with sarcomatous change. The rarity of tubal gestation in myoma uteri is emphasized, and the fullest consideration is given to the association of uterine pregnancy and myoma. Most opportune is the section dealing with radiotherapeutics. This is a valuable summary of extensive observations from various sources regarding treatment by the roentgen ray, radium and mesothorium. Lockyer believes that radiotherapy acts chiefly by destroying the ovaries, but that the roentgen ray has also a direct influence on the myoma cells, though this is variable in producing atrophic changes and shrinkage. Indeed, he is skeptical as to the ability of the roentgen ray to cause permanent atrophy in myoma. Radium and mesothorium used alone are not so suitable as the roentgeon ray, as no shrinkage of the growth can be expected. Radiotherapy should be employed only when the myoma is not complicated by adhesions, degeneration and other new growth. The contraindications outweigh the indications for radiotherapy.

Part II, dealing with adenomyoma, is a masterly review of our knowledge of this growth, and can be recommended as a valuable work of reference. The etiologic analysis gives full consideration to the wolffian origin hypothesis of von Recklinghausen, the mucous membrane origin so strongly urged by Cullen, the inflammatory theory of mucosal invasion, the embryonic or congenital theory, and the serosal theory. Lockyer believes that heterotopy of serosal epithelium is the probable explanation of the existence of epithelial spaces and cysts in most of the extra-uterine swellings found between the rectum and the genital tract. There is also a detailed description of these tumors as found in the fallopian tubes, round ligaments, ovarian ligaments, broad ligaments, rectogenital space and alimentary tract. The author is of the opinion that adenomyomas very rarely become malignant. They are more frequently associated with pelvic peritonitis than myomas. Radiotherapy is unavailing in the treatment of these tumors, and may excite inflammatory processes.

Part III, dealing with surgical measures and with postoperative complications, is written in a manner that gives evidence of a wide and sound clinical experience.

The author and publishers of this important volume are to be highly congratulated on its production. It should find a place in every medical library in America.

Local and Regional Anesthesia, with Chapters on Spinal, Epidural, Paravertebral, and Parasacral Analgesia, and on Other Applications of Local and Regional Anesthesia to the Surgery of the Eye, Ear, Nose and Throat, and to Dental Practice. By Carroll W. Allen, M.D., Assistant Professor of Clinical Surgery at the Tulane University of Louisiana. With an Introduction by Rudolph Matas, M.D., Professor of General and Clinical Surgery at the Tulane University of Louisiana. Second edition. Cloth. Price, $6.50 net. Pp. 674, with 260 illustrations. Philadelphia: W. B. Saunders Company, 1918.

The perusal of this book will prove interesting to any one who is at all concerned with the subject of local anesthesia. From the standpoint of the practical surgeon there is a great deal of valuable material, most of which evidently is presented only after prolonged, careful observation and trial by the author and his associates. There is much that may be given instant approbation; there is also much, particularly in connection with major procedures, that the prudent surgeon might not feel justified in applying unless the indications were of the most urgent nature. It must be admitted that the author is judicially conservative and that in general the discussion is well balanced—there is no overzealous praise of pet procedures. The first eleven chapters deal with the history and theory of local anesthesia, an analysis of fifteen or twenty local anesthetics with a chapter on toxicology, and a thorough presentation of the principles of technic. The remainder of the book consists largely of descriptions of the various operations possible under local anesthesia.

Naval Hygiene. By James Chambers Pryor, A.M., M.D., Medical Inspector, United States Navy. Published with Approval of the Surgeon-General, U. S. Navy and by Permission of the Navy Department. Cloth. Price, $3 net. Pp. 507, with 153 illustrations. Philadelphia: P. Blakiston's Son & Co., 1918.

The author has been in service on board ship and in naval stations, and has taught naval hygiene in the United States Naval Medical School. The book is based on the need for a text of this character as shown by the work of the classes in the United States Naval Medical School. The problems on board ship are different from those of Army camps. Thus the question of air aboard ship and of ventilation assumes far greater relative importance than in military camps. In the same way the question of water supply and sewage disposal aboard ship are special problems. In fact, all of the problems of hygiene and sanitation in the Navy are distinctly special in character. The civilian physician called to active service in the Naval Medical Reserve Force will, therefore, find this textbook of great value. It is well illustrated, quite elementary and very practical.

Medicolegal

Burden of Proof on Party Given Wrong Medicine on Prescription

(Fagan v. McRae (N. Y.), 169 N. Y. Supp. 577)

The Supreme Court of New York, Appellate Term, First Department, reverses a judgment for $500 that was rendered in favor of the plaintiff, and orders a new trial, on the ground that the plaintiff failed to sustain the burden of proof in this action against a druggist who was charged with having failed to fill a prescription given by the plaintiff's physician according to its directions. The court says that the defendant admitted the filling of the prescription, but denied that it was incorrectly filled. The medicine was prepared and delivered by the defendant on Tuesday. The plaintiff was given the medicine every three hours. On Thursday the physician called, and the plaintiff had by that time taken two thirds of the contents of the bottle. She had become very sick on Tuesday night, and had grown worse. The physician was shown the bottle on Thursday, and found the contents to be of whitish color, with much sediment. The medicine prescribed was of a clear brownish color. After that the plaintiff took no more of the wrong medicine. She continued ill, and was treated by the physician for three months. The defendant offered no evidence. The proof that the defendant had delivered a medicine different from the one ordered by the physician seemed to be adequate. The court was thus called on to determine what injury, if any, was caused by the error. Although the plaintiff was ill for three months, it nowhere appeared in the record what her ailment was at any time; in fact, it did not appear that the physician himself knew. All the court had were vague suggestions that the plaintiff might have been suffering from so-called German measles. The only evidence from which any inference might be drawn as to the effect of the wrong medicine was the physician's testimony that the plaintiff's condition was made worse; that the medicine certainly was bad for the plaintiff. The witness, being unacquainted with the ingredients of the medicine, could have had no reason for his conclusion, other than the circumstance that a different medicine was given. The fact that the plaintiff grew worse might, for all that appeared, have simply been due to the failure of the patient to receive the benefit of the remedy prescribed. The burden was on the plaintiff to show that the result of the wrongful act of the defendant—the giving of the wrong medicine—was the proximate cause of the injury claimed to have been suffered. The plaintiff failed to sustain the burden.

Liability of Lessors for Death from Failure to Heat Premises

(Keiper v. Anderson et al. (Minn.), 165 N. W. R. 237)

The Supreme Court of Minnesota affirms an order overruling a demurrer and holds that an action was maintainable that was brought by a woman as administratrix to recover damages for the death of her husband alleged to have been caused by the wrongful acts or omissions of the defendants in failing properly to heat a store building which they had leased to her husband and contracted to keep heated to a comfortable and proper temperature. The complaint stated the terms of the contract and alleged negligence and carelessness on the part of the defendants in failing properly to attend to the heating as the cause of Mr. Keiper's death. The defendants demurred, contending that the action could not be maintained because it was on contract, and because the statutory action to recover for death by wrongful act or omission could be maintained only when the cause of action was in tort. The court says that it is doubtless true that the word "tort," as well as the word "wrongful," usually signifies a breach of legal duty, independent of contract rights. But this is by no means always true. Take such contract relations as carrier and passenger, physician and patient, attorney and client, landlord and tenant; when there is actual negligence or wrong on the part of the carrier, physician, attorney or landlord, is it not still negligence or a wrong notwithstanding that the duty is imposed by the contract? There may be a breach of contract without negligence, but there may be negligence or wrongful acts or omissions in the performance of a contract. It seems to the court to make no difference whether the duty to use due care is one imposed directly by law or exists because of the contract relation of the parties. The court is unable to see why the complaint in this case did not allege negligence on the part of the defendants and that Keiper's death was caused by their wrongful acts and omissions.

Society Proceedings

COMING MEETINGS

American Association of Railway Surgeons, Chicago, Oct. 16-18.
American Public Health Association, Chicago, Oct. 14-17.
Assn. for S. & P. of Inf. Mort., Asheville, N. C., Nov. 11-14, 1918.
Southern Medical Association, Asheville, N. C., Nov. 11-14, 1918.
Virginia State Medical Society, Richmond, Oct. 22-25.
Western Roentgen Society, Chicago, Nov. 20-22.

COLORADO STATE MEDICAL SOCIETY

Forty-Eighth Annual Meeting, held at Estes Park, Sept. 9-11, 1918

The President, DR. EDWARD JACKSON, *Denver, in the Chair*

Operations for Gastric and Duodenal Ulcer

DR. A. R. POLLOCK, Monte Vista: The surgical methods of treating stomach and duodenal ulcer are: 1. Gastro-enterostomy. 2. Direct attack of the ulcer, with or without gastro-enterostomy. 3. Pyloric closure with gastro-enterostomy, with or without direct attack of ulcer. 4. Gastroduodenostomy. 5. Resection of stomach, gastro-intestinal continuity reestablished by (*a*) anastomosing proximal and distal ends as is done in sleeve resection; (*b*) by the second method of Billroth as is done after pylorectomy; (*c*) by gastrojejunostomy, the Polya operation, following extensive resection of stomach, or by (*d*), antecolic gastrojejunostomy, as described by Balfour. The operation should be adapted to the case.

DISCUSSION

DR. C. B. LYMAN, Denver: There is a great difference of opinion among surgeons as to what procedure should be carried out in different cases. Gastro-enterostomy is done more frequently than any other operation, but it is not a perfect procedure. Patients return with various symptoms. The right method may not have been used. The operation is done as a mechanical one and must be done right. The opening between the jejunum and stomach may have been made so close to the pylorus that there was no drainage, or the opening may be too small. The gastro-enterostomy opening must be made much larger at the time of operation than seems necessary so as to provide for future contraction.

DR. C. D. SPIVAK, Denver: Surgeons are beginning to realize that operations for ulcer of the stomach, no matter what method is used, are not always successful. The patient is not cured.

DR. FROST C. BUCHTEL, Denver: The essayist leads us to believe that we must exercise a certain amount of judgment in the selection of the operation, depending on the type of ulcer. Gastro-enterostomy cures a very large percentage of cases of peptic ulcer after they have had half a dozen so-called medical cures. Many of the cases of peptic ulcer are duodenal ulcers, and gastro-enterostomy is the best type of operation for duodenal ulcer. Some of our bad results from gastro-enterostomy come from the fact that we expect the operation to cure gastric ulcer, which it does not do. I think that surgeons are now agreed that direct attack of the ulcer, usually with some form of drainage operation, is desirable in gastric ulcers.

DR. A. R. POLLOCK, Monte Vista: Chronic ulcer is a surgical condition. It is true that some patients are not relieved by gastro-enterostomy, but gastro-enterostomy in itself is not sufficient. Something more should be done.

The Contributions of Colorado Physicians to Medical Literature, and The Journal of the American Medical Association as the Index

Dr. C. D. Spivak, Denver: Medical literature comprises the following classes: 1. Literature of all the branches of medical sciences as taught in all the medical schools, including those usually called irregular. 2. Literature of all other sciences and arts so far as they are applied to and have a bearing on the medical sciences. 3. Biographies of medical men and of scientists who have contributed to the advancement of medicine. 4. History of medicine. 5. The writings of medical men outside of medical science in which the influence of their medical training may be discerned. 6. General literature which has a specific bearing on or reference to medicine and physicians. About 1900 The Journal of the American Medical Association introduced new forms, new type, new departments. The number of readers increased, the number of advertisers multiplied. The Journal became a prosperous concern, a big business. Nothing succeeds like success. Those who scorned the idea of having their name associated with the plebeian periodical published in the wild and woolly West sat up and took notice, and then flocked to The Journal with their contributions. For who is so blind as not to see that a periodical, the circulation of which is rapidly nearing the 100,000 circulation mark, is a better medium than that of any medical publication in this country, the circulation of the best of which never exceeded 25,000 copies?

Dermatitis Seborrhoeica

Dr. G. P. Lingenfelter, Denver: No treatment will be successful unless it is thoroughly recognized that the scalp is the important factor in connection with the general disease. It is an excellent plan to remove the oil and the greasy plugs by means of deodorized benzin before applying the remedies. This is a most satisfactory and effective cleansing agent, and is much less irritating to the skin than ether. Lesions on the face are best treated by means of lotions, and for this purpose the lotio alba, with a small amount of sulphur added, serves admirably.

An excellent combination is: ammoniated mercury, 1.3 gm.; liquor carbonis detergens, 4 gm.; petrolatum, 3 gm. A paste is made and applied several times a day to the dry scaling patches frequently seen at the border of the scalp.

The thickened epidermal patches (seborrheic warts) of middle aged or elderly persons can be removed by the use of keratolytic remedies, such as salicylic acid, or by repeated exposures of the roentgen ray, by the curet, or by the application of carbon dioxid snow. The latter remedy nearly always gives satisfactory results from a cosmetic standpoint, and recurrences have been very infrequent. It is much safer and speedier than the roentgen ray, and because of the freedom from possible undesirable effects is much to be preferred. Recently, as an adjuvant to local treatment, I have had satisfactory results with the Alpine sun lamp, employing sufficient exposure to produce an intense erythema.

Necessary Cooperation in Prenatal Care and Obstetrics

Dr. Foster H. Cary, Denver: Prenatal care should begin as soon after the advent of pregnancy as possible. The public should be educated to the importance of seeking advice soon after conception has occurred. The excellent results following the establishment and intelligent conduct of prenatal clinics have been evident not only in the diminution of avoidable complications at labor, but also in the end-results months postpartum. Many physicians fail to impress on patients the necessity of frequent visits to the office for examination. Prenatal care embraces a careful family and personal history, an early and complete examination, blood pressure readings, a Wassermann test, pelvic measurements, bimanual examination for displacements in the early months before the fundus has risen above the symphysis, urinalysis and detailed instructions as to hygiene, diet, exercise, work and excesses. The social service worker is best adapted to work in prenatal care. Her position makes it easy for her to inspire confidence and to act as a great factor in the establishment of cooperation between the charities and the physicians or hospitals.

Absolute Rest in the Treatment of Pulmonary Tuberculosis

Dr. S. W. Schaefer, Colorado Springs: Tuberculous patients usually come to us below par in body and nervous energy and weary in mind. Rest in bed is one of the chief aids in building up the run-down body; antibodies must be formed to combat the tubercle bacilli. Instead of wasting the small store of energy the patient still has, in holding himself erect or sitting or moving about, all this energy should be concentrated on fighting the disease.

Eversion of Tissue Margins in Wound Approximation

Dr. C. E. Tennant, Denver: The most successful repair of a wound occurs when there is an accurate approximation of the various layers of tissue. Since most of these tissues are of but knife-blade thickness, it stands to reason that cell proliferation will not bridge the gap so well when these narrow margins are barely approximated with the average method of suturing, as when brought side to side by eversion. As a rule, the result of wound healing will be satisfactory in a reverse ratio to the amount of granulation tissue produced or required in the process of repair. This eversion is secured by placing a tenaculum at each angle of the incision in the layer of tissue to be united and put the tissue on the stretch. The layers to be sutured then come well out of the wound, the margins become everted, and with a good strong thumb forceps the operator grasps the everted edge, including both margins, and the needle is engaged in what seems to be one layer of tissue. The ordinary over-and-over suture or lock stitch is used for a short distance. At various intervals along the line a continuous mattress suture is dropped in order to keep the tissues in eversion when they fall back into the wound, and then again the over-and-over suture is applied for a short distance. These two types of suture are used at various intervals until the layer of tissue is completely approximated. The next layer is then sutured in like manner.

Blood Transfusion

Dr. Frost C. Buchtel, Denver: An analysis of the last 100 blood transfusions I have given shows the following results: 46 of the 100 were given for pernicious anemia; 16 for bleeders (purpura hemorrhagica and hemophilia); 14 for acute hemorrhages; 12 for secondary anemia; 11 to prepare patients for operation (9 of this list are also included in other groups); 7 for sepsis; 1 for shock; 1 for malnutrition, and 1 for Hodgkin's disease, making a total of 109, 9 of which were counted twice. The acute hemorrhage cases give brilliant results. The transfusions under this heading were given for the following conditions: 3 for gastric hemorrhage; 3 for postoperative bleeding; 1 for hemorrhage in typhoid fever; 2 for placenta praevia; 1 for premature separation of the placenta; 1 for postpartum hemorrhage; 1 for ruptured ectopic gestation, and 1 for hemorrhage from papilloma of the bladder. Among these fourteen transfusions for acute hemorrhage there were three deaths.

There is a great field for transfusion in preparing patients for operation. Seven of the eleven patients in this group could not have been operated on at all without the transfusion. All the patients stood the operation well.

Tuberculosis in Children

Dr. George Cattermole, Boulder: Recent studies have made it more certain that tuberculosis is contracted chiefly in infancy and childhood. The percentage of children that are infected before the age of 15 years varies according to locality. Between the ages of 4 and 15 years there are not many children who show active tuberculosis. Before 4 years of age, tuberculosis of the bronchial glands, meninges, peritoneum and lungs is common. After 4 years the most common seat is in the bronchial glands, the cervical glands are also often involved, and, in a smaller number of cases, the joints. The mortality from tuberculosis is low between the ages of 4 and 15 years, even though the number of children that react to the skin tests gradually increases during these years. These children have a high degree of resistance to tuberculosis, and it is then that they should acquire immunity. In those children that have active lesions in the joints, glands or peritoneum, there is a marked tendency to heal.

It is very difficult to diagnose tuberculosis in children from physical signs in the chest. The skin tests should be used in order that we may know all of the children that are infected with tuberculosis. I am in favor of a general test of all schoolchildren. It would enable us to study the progress and development of the disease and to determine whether those that are infected in childhood or those who are infected in later life are the ones who make up the army of consumptives.

Tuberculin skin tests were made by me on 419 children. Of these, 47 per cent. showed a positive and 53 per cent. a negative reaction. One hundred and sixty-five patients showed 42 per cent. positive and 58 per cent. negative reactions. Two hundred and fifty-four charity patients showed 50 per cent. each of positive and negative reactions. Of 167 children tested at the university dispensary, 47 per cent. were positive and 53 per cent. negative, even though a large number of these children were from families in which there were one or more cases of tuberculosis. Of eighty-seven children examined at the orphans' home, 57 per cent. gave positive and 43 per cent. negative. This was the highest percentage of positive reactions obtained in any group of children, probably because of the fact that these children came from homes in which one or both parents had died of tuberculosis.

A history of exposure was obtained in 202 cases. Among 101 children that gave a negative reaction, sixty-one had been exposed to tuberculous parents and had escaped infection, while forty had not been exposed to infection in the home. This is a little more evidence of exposure in the home as being the chief cause of tuberculous disease in children.

(To be continued)

Current Medical Literature

AMERICAN

Titles marked with an asterisk (*) are abstracted below.

American Journal of Insanity, Baltimore

July, 1918, 75, No. 1

1 Traumatic and Emotional Psychoses. So-Called Shell Shock. J. R. De Fursac, Paris.—p. 19.
2 Insane Psychoneurotic. L. G. Lowrey, Boston.—p. 53.
3 Pathology of Choice Reactions. F. L. Wells and H. A. Sturges.—p. 81.
4 Some Familial and Hereditary Features of Amaurotic Idiocy. I. H. Coriat, Boston.—p. 121.
5 Relation of Alcohol to Mental States. R. Armstrong-Jones, London.—p. 133.
6 Historical Pathology; Case of King Louis XI of France. C. Robinson, Princeton, N. J.—p. 155.

American Journal of Obstetrics and Diseases of Women and Children, York, Pa.

August, 1918, 78, No. 2

7 *Escape of Foreign Material from Uterine Cavity into Uterine Veins. J. A. Sampson, Albany, N. Y.—p. 161.
8 Ossification Centers of Fetal Pelvis. F. L. Adair, Minneapolis.—p. 175.
9 *End-Results of Conserved Ovary. J. O. Polak, Brooklyn.—p. 199.
10 Shall We Cut and Reconstruct Perineum for Every Primipara? R. H. Pomeroy, Brooklyn.—p. 211.
11 *Medical Teaching and Research After the War. J. G. Clark, Philadelphia.—p. 220.
12 *Bladder of Women After Operation. A. H. Curtis, Chicago.—p. 230.
13 *Most Effective Methods of Control of Venereal Diseases. J. M. Baldy, Philadelphia.—p. 238.
14 *Why the Midwife? J. C. Edgar, New York.—p. 242.
15 Obstetrician's Responsibility for Conservation of Infant Life. C. Foulkrod, Philadelphia.—p. 255.
16 Pernicious Anemia Complicating Pregnancy; Report of Case. P. Findley, Omaha.—p. 262.
17 *Complete Exstrophy of Bladder with Split Pelvis as Complication of Pregnacy. C. J. Miller and E. L. King, New Orleans.—p. 267.
18 Pelvic Peritonitis of Female Genitalia Origin. A. B. Keyes, Chicago.—p. 274.
19 Malignant Tumors of Breast: Résumé. C. F. Nassau. Philadelphia.—p. 283.
20 Case of Fetus Papyraceous with Twin Pregnancy. G. C. Mosher, Kansas City, Mo.—p. 288.

7 and 11. Abstracted in The Journal, June 15, 1918, p. 1885.

9, 13, 14 and 17. Abstracted in The Journal, June 22, 1918, p. 1975.

12. Abstracted in The Journal, June 22, 1918, p. 1974.

American Journal of Physiology, Baltimore

August, 1918, 46, No. 5

21 Significance of Reaction to Shading in Chiton. W. J. Crozier and L. B. Arey, Chicago.—p. 487.
22 Reactions of Frogs to Heat and Cold. E. S. Brooks.—p. 493.
23 *Epinephrin Vasodilator Mechanisms. F. A. Hartman, L. G. Kilborn and L. Fraser, Toronto.—p. 502.
24 *Constriction from Epinephrin Acting on Sympathetic and Dorsal Root Ganglia. F. A. Hartman, L. G. Kilborn and L. Fraser, Toronto.—p. 521.
25 Multiple Sensory Activities of So-Called Rhinophore of Nudibranchs. L. B. Arey.—p. 526.
26 *Acapnia and Shock. Venopressor Mechanism. Y. Henderson and S. C. Harvey, New Haven, Conn.—p. 533.
27 *Influence of Drugs on Intestinal Rhythmicity. W. C. Alvarez, San Francisco.—p. 554.
28 Motor Functions of Cecum. W. C. Alvarez and E. Starkweather, San Francisco.—p. 563.
29 *Histologic Study of Fat Contained in Mucosa of Alimentary Tract of Moderately Starved Cats. W. A. McIntosh, Baltimore.—p. 570.
30 *Extirpation of Duodenum. L. R. and C. A. Dragstedt, J. T. McClintock and C. S. Chase, Iowa City, Iowa.—p. 584.
31 *Venopressor Mechanism. D. R. Hooker, Baltimore.—p. 591.

23. **Epinephrin Vasodilator Mechanisms.**—That sympathetic vasodilators to the limb exist and that they are sensitive to epinephrin at the gangliar and peripheral ends is the conclusion reached by Hartman, and his associates. While a limb is dilating from denervation, epinephrin produces an increase in volume with difficulty, but while the reverse change is taking place the dilator effect of epinephrin begins to reappear. After denervation of a limb, of greater duration, the dilatation from epinephrin occurs from a greater range of doses than is the case in the normal limb. The peripheral action (dilatation) becomes similar in both normal and denervated limbs after perfusion. Under these conditions also dilatation occurs with a greater range of doses. Depressor doses of epinephrin can cause dilatation of a limb by action on the gangliar mechanism. Epinephrin acts on both gangliar and peripheral mechanisms in producing dilatation of the hind limb.

24. **Vascular Response of Epinephrin on Nerve Ganglions.**—The authors found that epinephrin occasionally produces constriction in the hind limb by its action on the sympathetic and dorsal root ganglions. Constriction of the intestine is sometimes produced by epinephrin acting on the superior mesenteric and dorsal root ganglions.

26. **Acapnia and Shock.**—The purpose of this paper is to present facts indicating that, in addition to indirect vasomotor nervous influences, there is a peripheral chemical control of the volume of the venous return, and reasons for holding that it is this chemical control which is the chief factor in the high venous pressure of muscular work and in the lowering of venous pressure induced by acapnia and itself causing the circulatory depression following anesthesia and surgical operation. Two series of experiments were made. The general significance of the results obtained appears to be as follows: Procedures which strongly influence vasomotor innervation, for instance, spinal section, spinal stimulation, stimulation of an afferent nerve, splanchnic stimulation and intravenous injection of epinephrin, cause on the whole decidedly greater alterations of arterial than of venous pressure, and the alterations of venous pressure are often only momentary and therefore largely indirect and secondary to redistribution of blood. In the beheaded cat increase of carbon dioxid in the blood (with ample oxygen), which has little or no effect on arterial pressure other than an increased amplitude of pulse, causes an enormous rise of venous pressure. The pressure develops gradually as the carbon dioxid accumulates in the tissues and falls again gradually as the excess of carbon dioxid is ventilated out of the body.

These facts, and others, indicate the existence of a venopressor mechanism distinct from the vasomotor nervous regulation and consisting in a peripheral chemical control, largely through variations in the carbon dioxid content of the venous blood, over the venous pressure and the volume of the venous return. As venous pressure and the volume of the venous return are essential elements in the diastolic filling of the heart, and thus are factors in determining the volume of blood circulated in unit time, it appears probable that the venopressor mechanism may play a part in the increased circulation during muscular exertion. It thus assists in coordinating the volume of the blood stream with the energy expenditure and gaseous metabolism of the tissues. As it is now generally admitted that in shock it is the decreased venous return which is the cause of the fall of arterial pressure, the relation of carbon dioxid to the venopressor mechanism affords an explanation of the mode by which acapnia induces circulatory failure.

27. **Influence of Drugs on Intestinal Rhythmicity.**—Sets of five segments from different parts of the bowel were studied by Alvarez under identical conditions in a beaker of aerated Locke's solution. Of the seventy-five drugs tested, eight increased the rate, forty-six slowed it and twenty-one had no effect. Calcium chlorid, calcium lactate, benzene, nicotin, ammonia, sodium hydrate, potassium hydrate and mercuric chlorid increased the rate. Marked slowing was produced by alum, antimony potassium tartrate, carbon dioxid, cascara, chloral hydrate, digitalis, ergot, formaldehyd solution, hydrochloric acid, ipecac, jalap, phenylhydrazin, potassium cyanid, quinin salts, senna, and sodium citrate and nitrite. With a number of the drugs the rate of the ileal segment was more affected than that of the duodenal segment; and there was a gradation in the percentage of increase or decrease from one end of the bowel to the other. This suggests that the rate in the upper part of the intestine is more stable and perhaps more nearly maximal than it is in the ileum.

Drugs which increase or decrease the tone and amplitude of contraction do not necessarily affect the rate. Thus, pilocarpin and barium chlorid, which increased the tone, decreased the rate. Calcium salts, which increased the rate, diminished the amplitude of contraction. This suggests two phases of muscular metabolism acted on, one concerned with tone and amplitude, the other with the rate. Digitalis slows the intestinal contractions much as it slows those of the heart. Excepting those cases in which the colonic rhythm was stopped entirely, it was practically unaffected by the drugs which caused marked changes in the rate of the small intestine.

29. **Fat in Alimentary Mucosa of Starved Cats.**—McIntosh claims that normally there is fat in the epithelial cells of the stomach and intestine which is not associated with the phenomenon of fat absorption; that this normal fat varies, however, with some definite cycle of functional activity of the cells themselves; that at certain periods the lipoids are in such a condition that they can be demonstrated by histologic methods while at others they are not demonstrable. The normal presence of these lipoids must be taken into account in estimating experimental results.

30. **Extirpation of Duodenum.**—The experiments here reported indicate that animals can survive indefinitely a complete extirpation of the combined jejunum and ileum. A dog was kept three months after a complete removal of the pyloric part of the stomach, the entire duodenum and the upper jejunum. The mucosa of this region of the digestive tract is not comparable to the suprarenals or parathyroids in function. The normal secretions of the duodenum and jejunum are not toxic. When bacteria are excluded from the lumen of the intestine, various pathologic changes even to complete occlusion of the blood supply to an isolated piece of intestine with resulting autolysis and reabsorption, can take place without the elaboration of sufficient toxic substances in the cells themselves or in their secretions to kill the animal. The duodenum does not excrete in the duodenal juice any substance necessary for life or for the function of the intestine lower down.

31. **Venopressor Mechanism.**—A preparation of the large intestine in the dog is described by Hooker on which a rise of venous pressure may be demonstrated independently of arterial and other factors. The rise of venous pressure may be obtained by (*a*) stimulation of the nerve to the part (peripheral mechanism); (*b*) stimulation of a sensory nerve (central reflex mechanism), and (*c*) central stimulation by asphyxia. Attention is called to the fact that activity of the intestinal muscle may contribute to the movement and pressure of the blood in the portal venous system.

Archives of Pediatrics, New York

August, 1918, **35**, No. 8

32 *Parenteral Administration of Fluids to Infants and Children. A. C. Silverman, Syracuse.—p. 449.
33 *Spinal Fluid in Anterior Poliomyelitis. J. H. Larkin and L. H. Cornwall, New York.—p. 459.
34 Educational Value and Opportunities of Baby Health Stations. J. Sobel, New York.—p. 468.
35 Case of Scurvy with Summary of Fifty Other Cases. S. McLean, New York.—p. 477.
36 Case of Toxic Meningitis Following Measles. F. Tweddell, Summit, N. J.—p. 482.

32. **Parenteral Administration of Fluids.**—Silverman's personal experience with puncture of the longitudinal sinus comprises some twenty cases. Some were done for diagnostic purposes—for obtaining blood for a Wassermann test or for chemical analysis or for blood culture. In the majority of instances, intravenous injections of salt solution, glucose or sodium bicarbonate were given. In no case were any untoward symptoms observed incidental to the injection. Some severe cases of cholera infantum have shown a marked improvement after a single injection of salt solution intravenously. In one case in which the heart had apparently stopped, experience with experimental animals suggested the use of epinephrin, and a suitable dose in normal saline was injected into the sinus with most gratifying results. The accumulated experience of the past three years gives sufficient evidence of the usefulness of this method. It should be remembered that it is used in exceedingly sick babies in whom the prognosis is at best unsatisfactory.

33. **Spinal Fluid in Poliomyelitis.**—Observation made in fifty cases leads Larkin and Cornwall to believe that the increase of the pressure is the most persistent of the changes in the spinal fluid and that it does not disappear until several months after the acute symptoms have subsided. After the tenth day it is present in nearly 100 per cent. of cases. An increase in pressure occurred in 93.5 per cent. of fluids examined from the first to the fifteenth day of illness. It persisted longer than any of the other fluid changes. Of the fluids, 93 per cent. showed an increase in the globulin content. This increase was noted before the pleocytosis and persisted longer. A pleocytosis occurred in 86 per cent. of fluids. The lymphocytes, especially the small variety, predominated. The cells diminished before the globulin. The total leukocytes of the blood were highest during the first ten days, averaging 18,500. As the total leukocytes diminished there was a relative increase in the polymorphonuclears. There was no curve noted with the Lange colloidal gold reaction diagnostic of anterior poliomyelitis. No parallelism existed between the colloidal gold curve and the other spinal fluid or blood findings. There appeared to be a tendency for the height of the colloidal gold curves to increase with the severity of the infection. The higher curves were more frequent from the tenth to the fifteenth day. Of the colloidal gold curves 63 per cent. were humped. Of the five fatalities among forty-nine cases, one fluid gave a curve to two, three fluids gave curves to three, and one fluid gave a curve to four. Three of the fluids from fatal cases were humped or of the syphilitic type, and two were descending, resembling the paretic type.

Boston Medical and Surgical Journal

Sept. 19, 1918, **179**, No. 12

37 Fatigue and Exhaustion. J. M. Taylor, Philadelphia.—p. 385.
38 Scarlet Fever Carriers. D. M. Lewis, New Haven, Conn.—p. 389.
39 Treatment of Essential Facial Neuralgia by Local Alcoholization. J. A. Sicard, France.—p. 392.
40 Ultraviolet Light Symptomatic Cure for Eczema. J. Bryant, Boston.—p. 394.

Florida Medical Association Journal, Jacksonville

August, 1918, 5, No. 2

41 Practical Points in Ophthalmology for General Practitioner. W. H. Adams, Jacksonville.—p. 21.

Journal of Laboratory and Clinical Medicine, St. Louis

August, 1918, 3, No. 11

42 *Communicable Diseases in National Guard and National Army of United States During Six Months from September 29, 1917, to March 29, 1918. V. C. Vaughan and G. T. Palmer, Washington, D. C.—p. 635.

42. **Communicable Diseases in United States Army.**—This report has been prepared with the object of giving publicity during the present year to the salient features of communicable disease incidence in the United States Army during the past winter. The statistical data have been drawn from the telegraphic reports sent in weekly from each camp, cantonment and army post or station. The data given deal for the most part with thirteen National Guard camps and sixteen National Army cantonments, which represent over 70 per cent. of the troops in this country during the period in question.

It was seen that the average death rate (9.1) for the whole army is higher than that of New York (5.5), St. Louis (5.5), Pittsburgh (6.2), Chicago (5.2). The death rates in the different camps show wide variation. In three National Guard camps it was between 23 and 29 per cent.; in three between 10 to 1 per cent.; in two between 8 and 9 per cent.; in five between 2 and 3 per cent. In the National Army camps, the death rate was 30.7 in one camp; between 10 and 20 per cent. in four; between 7 and 9 in three; between 5 and 6 in three; between 3 and 4 in four, and under 3 in one.

The reasons for the wide variations in the death rates in the different camps is a difficult one to ascertain. (1) Some of the camps have acted as filters through which many troops have passed, leaving their most unfit on the filter. In a general way it can be stated that those camps which may be designated as closed camps and which have been least employed as filters are the healthiest camps. (2) Under similar conditions the negro is more susceptible to the acute respiratory diseases than the northern man. Southern whites are more susceptible to these diseases than are the northern whites. It is an opinion generally held by medical officers in southern camps that hookworm disease and chronic malarial infection increase susceptibility to the acute respiratory diseases. (3) There is no reason for believing that either morbidity or mortality in any camp has been due to faulty sanitation, as we usually understand this term. All the camps are kept clean, have unquestioned water supplies, satisfactory garbage and sewage removal, etc.

Comparing the National Army and the Guard, it will appear that the death rates have been practically the same among soldiers in tents and those in barracks. Comparing the National Guards of certain states and the National Army from the same states it is seen that the death rate in the National Army has, in each case, been higher than in the National Guard. This is probably due to the fact that the National Guard contained more seasoned troops than the National Army.

The diseases which have been responsible for the greatest number of deaths in the Army during the period covered by this report are the acute respiratory diseases. These may be named in the order in which they have caused deaths, as follows: pneumonia, meningitis, measles, scarlet fever and diphtheria. With the addition of tuberculosis these have caused 77 per cent. of all deaths. Sixteen per cent. of deaths have been due to other diseases, and 7 per cent. due to causes other than disease, such as mechanical injuries. The acute respiratory diseases have caused an excessive death rate in the Army compared with that due to the same causes in civil life. Pneumonia has caused by far the greatest number of deaths in the Army, and has been responsible for about 80 per cent. of total deaths caused by all the respiratory diseases. Each respiratory disease, except tuberculosis, has caused an excessive fatality in army life. It is evident that the low tuberculosis death rate in the Army is due to the elimination of those with active forms of this disease. Furthermore, it is probable that most of the deaths from tuberculosis in the Army have been due to the activation of inactive foci by acute respiratory diseases.

While both pneumonia and meningitis have exacted the greatest toll in life, they have not been as important a factor in incapacitating troops as some other causes. Measles is a large factor in this connection. The annual morbidity rate for measles for all troops in this country during the six months' period was 105 per thousand. The rate for pneumonia was 24.2, that for meningitis 4.1. Pneumonia and meningitis are the more fatal diseases and therefore, although fewer cases occur, the number of deaths is great. The fatality rate, or case mortality rate, for all troops during the six months' period has been 23 per cent. for pneumonia, 27 per cent. for meningitis and 0.1 per cent. for measles. Most numerous as causes of sickness are those less fatal ailments such as colds, influenza, bronchitis and mumps.

The National Army with its new recruits fresh from civilian life shows the highest rate in venereal diseases and meningitis. National Guard troops, however, show the highest rates for measles, pneumonia, malaria and typhoid. Regular Army troops, representing those longest in the service and in all probability an older average age, show the lowest rates in everything but scarlet fever and venereal disease, the latter being slightly above the rate for the Guard. Measles, pneumonia, meningitis and scarlet fever have existed in epidemic form in a number of the camps. Measles has been by far the most prevalent of the four. Scarlet fever has been of minor consequence. Typhoid has been a negligible factor as a cause of incapacitation. Mumps, bronchitis and influenza have likewise been widespread and although not fatal in themselves, have frequently been forerunners of pneumonia.

Vaughan and Palmer point out that to hope to reduce infection among our soldiers to the minimum without adequate attention to the health of the civilian population from which the soldier comes and with which he mingles more or less freely is without justification. All the infections which have appeared in the camps are distributed among the civilian population from which the soldiers in the camp have come. If the draft men were organized and drilled in small squads at home and gradually inducted into military life, and only those found to be free from infection sent to the camps, the control of communicable disease among the soldiers would be greatly aided. Meningitis has been most prevalent in those camps whose soldiers come from areas in which this disease has been endemic. The same thing is true of scarlet fever. Typhoid and paratyphoid occurred in only three camps and even here the incidence was very low. There were twelve camps that did not have a single case of typhoid or paratyphoid. It would be difficult to put forward testimony of a more striking nature as to the efficacy of the preventive measures now being utilized in the Army against typhoid. The American soldier today has found the army camp a safer place to dwell, so far as typhoid is concerned, than in the most favorably situated civilian community.

An extended review of the situation shows that the greatest single factor in the prevalence of disease in certain camps and their absence in others has been the natural susceptibility of the men. There have been added those aggravating factors such as exposure, fatigue, lack of warm clothing, cold quarters by day, cold quarters and insufficient bedding by night. In order to prevent a recurrence of the trouble, the authors suggest: First and foremost it seems necessary to graduate the introduction of civilians into army life. The change has been too abrupt. Men should be called first to a semiactive reserve army. Here they should get drill and the essentials of sanitation and self-care by lecture and by demonstration. The drill and calisthenics should be the hardening process. After this the transfer should be made to camp where a man's entire time is given over to his military training.

Before entering camp men should be examined for incipient disease. The suspects should be separated and watched before their dispatch to camp. Vaccination for typhoid and smallpox can be completed while in the reserve force. Once established in camp the transfer of men from one camp to another should not take place without a careful examination and removal of those who show signs of illness. This will prevent this all too frequent transportation of sick men, who are dangerous to others because of their sickness. These precautions together with care in the proper mixture of work and rest, judicial selection in the quality and balancing of the food ration, the adequate protection of the man, especially the one from the warm climate, against cold and exposure, his protection against the sick through effective quarantine measures, and discretion in the use of the physical hardening process should moderate to a large degree the experiences of the past winter.

Journal of Medical Research, Boston

July, 1918, 38, No. 3

43 *Investigations of Tropical Sunlight, with Special Reference to Photodynamic Action. A. W. Sellards, Boston.—p. 293.
44 Action of Extreme Ultraviolet of Tropical Sunlight on Complement Power of Serum. W. T. Bovie.—p. 335.
45 Complement Destruction as Measure of Effects of Radiation. S. C. Brooks, Boston.—p. 345.
46 *Immunity and Tissue Transplantation. Comparison of Heterotransplantation and Homoiotransplantation. M. S. Fleisher, St. Louis.—p. 353.
47 *Simple Method (Patient's Diluted Blood) for Blood Cultures. J. G. Wurtz, Pittsburgh, and S. W. Sappington, Philadelphia. —p. 371.
48 *Studies on Circulation of Kidney in Relation to Architecture and Function of Organ in Health and Disease. L. Gross, Toronto. —p. 379.
49 *Some Unusual Blood Cells in Diseases of Bone Marrow Origin. W. C. Thro, New York.—p. 385.
50 *Grafting of Tissues into Nearly Related Individuals in Rat, and Mode of Inheritance of Individuality—Differentials. L. Loeb, Washington, D. C.—p. 393.
51 Studies on Bacteriemias in Agonal Period. D. G. Richey and C. Goehring, Pittsburgh.—p. 421.
52 *Experimental Production of Lesions, Erosions, and Acute Ulcers in Rabbits, by Repeated Injections of Pilocarpin and Epinephrin. G. A. Friedman, New York.—p. 449.
53 Studies on Importance of Lymphocyte in Cancer Immunity. M. J. Sittenfield, New York.—p. 465.
54 Congenital Atresia of Esophagus without Other Malformation. C. T. Crowdy, Montreal.—p. 469.
55 Hernia Diaphragmatica Vera (Congenital Absence of Left Side of Diaphragm, Dextro Cardia; Tubular Stenosis (Coarctation) of Aorta Malformations of Liver and Lung). L. Gross, Toronto. —p. 473.
56 Corpora Amylacea in Lungs and Hamartomatous Nodules in Small Intestine Occurring in Case of Diaphragmatic Hernia into Left Pleura with Strangulated Bowel. L. Gross, Toronto.—p. 476.
57 Spina Bifida with Splitting of Cord by Exostosis from Vertebral Body. E. Smith, Montreal.—p. 479.
58 Degeneration, Senescence and New Growth. H. Oertel, Montreal. —p. 485.
59 *Treatment of Lobar Pneumonia with Antipneumococcus Serum. P. Kyes, Chicago.—p. 495.

43. **Investigations of Tropical Sunlight.**—It is by no means thoroughly established that sensitization to light in a photodynamic sense occurs spontaneously, even in the lower animals. Sellards claims that as yet there is very little evidence that such sensitization plays any significant part either in the etiology or therapy of the diseases of man.

46. **Immunity and Tissue Transplantation.**—A series of experiments in which both rabbit and guinea-pig kidney were transplanted into both rabbits and guinea-pigs was carried out by Fleisher. Guinea-pig kidney transplanted into guinea-pig shows active regeneration at an earlier period than does the same kidney transplanted into rabbits; eventually the degree of regeneration is the same in both animals. Rabbit kidney transplanted into rabbit shows far better regeneration than does the same tissue transplanted into guinea-pig. At best the rabbit kidney does not show as good regeneration as does the guinea-pig kidney. The connective tissue reaction is more marked about homoiotransplants than about heterotransplants. In general the connective tissue reaction is more marked in the guinea-pig. The rabbit seems to be a relatively better soil for the growth of guinea-pig kidney than is the guinea-pig for rabbit tissue. Fleisher failed to find evidence in his experiments that the leukocytic and connective tissue reactions are the factors of greatest importance in the poorer growth of heterotransplants, but he is inclined to believe that while these reactions may have some effect, the body fluids, through either the presence of injurious substances or the lack of substances necessary for the growth of the heterotransplant, are more important.

47. **Patient's Blood for Blood Cultures.**—According to Wurtz and Sappington the patient's blood diluted in a test tube of sterile water makes an excellent culture medium for a number of infections, at the same time furnishing the infecting organism. Evidence of this was found in fifty cases of croupous pneumonia yielding 38 per cent. of positive cultures, nineteen cases of streptococcus infection giving 47.3 per cent. of positive results, and seventeen typhoids with 64.7 per cent. positives. In pneumococcus and streptococcus infections, the method compares quite favorably with other cultural procedures; and in positive cases the bacteriologic diagnosis can be made in nearly every instance from the primary culture within twenty-four hours. In typhoid infection the bile method is superior on account of the time element, but if the slower growth is not prohibitive, the percentage of positive results with blood water will probably equal that with bile. The authors do not feel sure of the optimum dilution of blood for this work, but suggest 30 to 40 per cent. if only one tube is made, and a 5 to 10 per cent. and a 40 per cent. tube if two are taken. It is important to insure sterility of the water. The simplicity and economy of the method are obvious, and suggest its availability outside of hospitals.

48. **Circulation of Kidney.**—In contracted kidney Gross says there is a marked change from the normal in parenchymatous and vascular arrangement. The cortex is largely eliminated and has become passive, whereas the pyramids are preserved and better vascularized, possibly to take on a more active participation in the work in the kidney than in the normal physiologic sphere. This means renal insufficiency and perversity. It is justifiable to assume that these, together with the concomitant metabolic disturbances, gradually upset the economy of the whole organism, and ultimately are, at least largely, responsible for uremia and death.

49. **Unusual Blood Cells in Diseases of Bone Marrow Origin.**—In making a routine examination of the blood of a dispensary patient, the examination of the stained smear brought to light an unusual blood picture. The smears, from which the drawings were made, were stained with Hastings' modification of the Nocht-Jenner stains. The hemoglobin with the Dare was 45 per cent. The red cell count was 1,500,000. Index was high, that is 1.5. White blood cells numbered 4,000 to 5,000. In counting 300 leukocytes an equal number of nucleated red cells was noted down. Nucleated red cells of the three ordinary types were seen, that is, normoblasts, intermediates and megaloblasts. The cell called Turck's stimulation form was also present. The cells that interested Thro particularly correspond to the descriptions of Naegeli's myeloblasts or Turck's lymphoid marrow cells. In Thro's experience only one other case with pernicious anemia had a blood picture like the one described. These two patients had all the blood changes of pernicious anemia with the addition of cells characteristic of those found in so-called acute lymphatic leukemia, and it seems such are correctly designated by calling them cases of leukanemia.

50. **Grafting of Tissues.**—Loeb states that tissues transplanted from parents to children or from sisters and brothers to sisters and brothers, or from children to parents, behave in a manner intermediate between tissues after homoiotransplantation and autotransplantation. The difference between results obtained after transplantation from parents to children, and after transplantation of tissues from an animal to his sisters and brothers, is so small that it may be entirely accidental. Tissues transplanted from children to mother also show an intermediate behavior. All degrees of variation between the two extremes of results resembling those in autotransplantation on the one hand, and of homoiotransplantation on the other hand, are obtained after transplantation of tissues into near relatives.

52. **Experimental Production of Lesions.**—In all the rabbits injected by Friedman with pilocarpin, lesions, erosions, or acute ulcers were demonstrated in the mucosa of the stomach. In the rabbits injected with pilocarpin and epinephrin, lesions in the mucosa of the stomach and duodenum were evident. From these experiments it is clear, therefore, that through repeated injections of pilocarpin alone, lesions or acute ulcers were obtained in the stomach, while alternate injections of both pilocarpin and epinephrin produced in addition lesions or erosions in the duodenum.

59. **Antipneumococcus Serum Treatment of Lobar Pneumonia.**—Kyes reports 115 cases of acute lobar pneumonia in which the patients were treated with an antipneumococcus serum, and compares the mortality among these cases with the mortality in 538 similar cases of pneumonia occurring in the same institution during the same period, but not so treated. The antipneumococcus serum was produced by injecting massive doses of virulent pneumococci into the domestic fowl. Of the 538 patients not treated with the antipneumococci serum, 244 died—the death rate being 45.3 per cent. Of the 115 similar patients treated with the serum, twenty-four patients died—the death rate being 20.8 per cent. In the ward in which the serum was employed the death rate during the six weeks prior to the introduction of the serum treatment was 55 per cent. During the six weeks subsequent to the withdrawal of the serum treatment, the death rate was 51 per cent. These statistics show that among those cases treated with the antipneumococcus serum the death rate was less than one-half the rate obtaining among the similar cases not so treated, be they cases occurring in other wards during the same period, or in the same ward at other periods of the same year. This is the essential proof which Kyes has to offer that the antipneumococcus serum in question is of distinct value in the treatment of acute lobar pneumonia in man.

Journal of Urology, Baltimore

June, 1918, **2**, No. 3

60 *Study of Primary Hydronephrosis. J. T. Geraghty and W. A. Frontz, Baltimore.—p. 161.
61 *Absorption of Drugs and Poisons from Bladder and Urethra. Absorption of Various Alkaloids, Antiseptics, Local Anesthetics and Salts. D. I. Macht, Baltimore.—p. 211.
62 Effect of Administration of Urea on Ratio Between the Rate of Urea Excretion and Concentration of Urea in Blood in Experimental Glomerulonephritis. C. K. Katanabe, New York.—p. 227.
63 *New Operation for Epispadias.* H. H. Young, Baltimore.—p. 237.
64 Flexible Metallic Ureteral Sound with Filiform Guide. H. W. E. Walther, New Orleans.—p. 253.

60. **Primary Hydronephrosis.**—A study of their material showed Geraghty and Frontz that the most frequent cause of so-called primary hydronephrosis is an inflammatory contraction at the ureteropelvic junction, and that more careful microscopic study of this region in cases of hydronephrosis, without apparent cause, will disclose this lesion in a large percentage of them. In many cases in which aberrant blood vessels, renal mobility, or abnormal implantation of the ureter have been assigned as the cause of the hydronephrosis, careful examination of the upper ureter and pelvis will reveal inflammatory narrowings which have unquestionably played the primary rôle. When the kidney is extensively destroyed, nephrectomy, if not contraindicated, should be carried out. When the kidney, however, possesses valuable renal function or when a bilateral condition contraindicates nephrectomy, the various plastic procedures outlined above offer considerable prospect of success.

61. **Absorption of Drugs from Bladder and Urethra.**—Macht's experiments showed that a large number of drugs and poisons can be and are absorbed from the urethra, and that the absorptive power of the bladder is very poor as compared with that of the urethra. A review of clinical evidence agrees with the experimental findings. Poisoning through the urinary tracts has been reported and is not uncommon. The absorption of a large number of drugs and poisons—alkaloids, antiseptics, salts and local anesthetics—from the bladder and the urethra in the male was studied.

Kansas Medical Society Journal, Topeka

September, 1918, **18**, No. 9

65 Enlarging Scope of Neurologic Surgery. E. Sachs, St. Louis.—p. 211.
66 Pulmonary Tuberculosis; Its Nervous Manifestations. C. S. Kenney, Norton.—p. 217.

Maine Medical Association Journal, Portland

September, 1918, **9**, No. 2

67 Health Insurance. F. E. Rowe, Augusta.—p. 33.

Medical Record, New York

Sept. 21, 1918, **94**, No. 12

68 Treatment of Inoperable Cancer of Breast by Chemical Extirpation. (Phenol and Potassium Hydrate). C. W. Strobell, New York.—p. 487.
69 Common Deformities and Disabilities of Foot. J. Grossman, New York.—p. 492.
70 Results of Schick Test for Diphtheria Susceptibility on Five Hundred Selected Cases. C. A. Johnson, Los Angeles.—p. 498.
71 Control of Hemorrhage in Vaginal Hysterectomy. H. Crutcher, Tularosa, N. M.—p. 501.

New York Medical Journal

Sept. 21, 1918, **108**, No. 12

72 General Diagnostic Study by Internist. L. F. Barker, Baltimore.—p. 489.
73 Locomotion as Aid in Diagnosis. P. Luttinger, New York.—p. 494.
74 Technic of Intravenous Medication. F. Herb, Chicago.—p. 498.
75 Animal Powers not Mendelian Characters. C. L. Redfield, Chicago.—p. 499.
76 Appendicitis in Children. J. O. Bower, Philadelphia.—p. 501.
77 Mucous Colitis. R. Upham, New York.—p. 503.
78 Mobilizing Spas and Health Resorts of Nation. N. P. Norman, Fort Leavenworth, Kan.—p. 507.

Pennsylvania Medical Journal, Athens

September, 1918, **21**, No. 12

79 *Food Anaphylaxis and Methods of Making Tests. A. Strickler, Philadelphia.—p. 737.
80 Acute Suppuration of Middle Ear. J. C. Keeler, Philadelphia.—p. 743.
81 Laryngeal Tuberculosis. C. S. Rebuck, Harrisburg.—p. 747.
82 Herpes Zoster Ophthalmicus. J. F. Klinedinst, York.—p. 752.
83 Cooperation in Treatment. J. M. Taylor, Philadelphia.—p. 755.

79. **Food Anaphylaxis and Methods of Making Tests.**—There are two accepted methods of conducting the anaphylactic food tests. (1) The endermic and (2) the intradermic. Strickler prefers the intradermic method which consists in the introduction of a solution of a food protein in the layers of the skin by means of a hypodermic needle. As a result of this procedure a white wheal is produced at the point of injection and often there is a reddened zone around the blanched spot. This is conceded to be the most delicate method which can be employed in conducting the endermic skin test. The amount injected in this method is 0.1 c.c. In none of Strickler's cases were there any evidences of a constitutional reaction of any nature whatever. He adopted the following standard as to what constituted a positive reaction. (1) A papule must be present at the point of injection. (2) In the vast majority of cases a zone of erythema is found around the papule. (3) Tenderness is often found at the point of injection. (4) The lesion must persist for more than twenty-four hours after the injection. Wait for forty-eight hours before reading the reaction. Strickler studied fifty-four patients with eczema and the great majority of them were kept under observation for some weeks. The following proteins were employed: cow casein, egg, beef, mutton, pork, chicken, fish, oysters, clams, crabs, wheat, oatmeal, rice, barley, tomato, and strawberries. The protein is extracted by the use of weak alkali, and after shaking and incubating the solution it is filtered, absolute alcohol is added, and the solution evaporated on a water bath. A saturated solution of this dry material is made in an alkalinized sodium chlorid solution. These preparations were tested for sterility, and for their nitrogen contents by the Kjeldahl method. Twenty-eight patients were in a greater or lesser degree benefited by a changed diet, as shown by the anaphylactic food test. In thirteen cases the food tests were entirely negative, and in the remainder the correction of diet, as shown by the food tests, did not have any influence on the disease. Of thirteen patients with urticaria, eleven showed positive anaphylactic food reactions, while two were entirely negative. In this series five were acute and the remaining eight were chronic cases. In the acute cases the removal of the offending article caused a rapid subsidence of the eruption, and these tests serve as a guide to ward off further attacks. Of eleven patients suffering with psoriasis, four gave positive reaction and seven were entirely negative. Only in one case was there some improvement in the eruption following the installation of corrected diet. Strickler studied sixteen patients suffering with acne vulgaris and three with

acne rosacea Five showed negative, the remainder positive reactions. In none of the cases, although most of them were kept under prolonged observation, did any noticeable improvement follow the corrected diet.

Southern Medical Journal, Birmingham, Ala

September, 1918, **11**, No. 9

84 *Oral Sepsis and Cardiovascular System. A. G. Brown, Richmond, Va.—p. 601.
85 *Relation of Oral Sepsis to Nervous System. E. B. Block, Atlanta, Ga.—p. 606.
86 Venereal Disease: Vital Social, Medical and Military Problem. H. Schoenrich, Baltimore.—p. 616.
87 *Normal College as Factor in Dissemination of Public Health Knowledge in South. M. F. Jones, Hattiesburg, Miss.—p. 624.
88 Some Unsettled Points in Surgical Treatment of Cholangitis and Cholecystitis. J. Darrington, Yazoo City, Miss.—p. 631.
89 Surgery of Gallbladder. J. R. Wathen, Louisville, Ky.—p. 633.
90 Indications for Removal of Gallbladder. W. C. Gewin, Birmingham.—p. 635.
91 Fracture of Hyoid Bone. J. T. Crebbin, New Orleans.—p. 642.
92 Mastoiditis Complicated by Unsuspected Lateral Sinus Thrombosis.—R. W. Bledsoe, Covington, Ky.—p. 643.

84, 85 and 87. Abstracted in The Journal, Dec. 29, 1917, p. 2207.

FOREIGN

Titles marked with an asterisk (*) are abstracted below. Single case reports and trials of new drugs are usually omitted.

Brain, London

June, 1918, **41**, No. 1

1 Interdependence of Sympathetic and Central Nervous Systems. D. Orr and R. G. Rows.—p. 1.
2 Conduction in Peripheral Nerve and in Central Nervous System. E. D. Adrian.—p. 23.
3 Stimulation of Motor Cortex in Monkey Subject to Epileptiform Seizures. C. S. Sherrington.—p. 48.
4 Intracranial Aneurysms. H. M. Turnbull.—p. 50.

British Medical Journal, London

Aug. 24, 1918, **2**, No. 3008

5 Education and Brain Development. W. A. Hollis.—p. 179.
6 Restoration of Function After Penetrating Gunshot Wounds of Knee Joint. J. Everidge and A. Fullerton.—p. 182.
7 *Treatment of Septic Wounds. F. W. Robinson.—p. 184.
8 Bed and Some Appliances for Gunshot Wounds of Femur and Back. M. G. Pearson.—p. 186.
9 Case of Septicemic Meningitis; Recovery. J. Dunbar.—p. 187.

Aug. 31, 1918, **2**, No. 3009

10 Educational Number, 1918-1919.—p. 209.

7. **Treatment of Septic Wounds.**—Robinson describes a method of keeping wounds elevated as well as compressed. He says that it allows of a complete toilet. The bactericidal serum enhances the defensive properties of a wound, which, as is well known, are at a high state of development at the time of infection. During the progress of healing the perfect immobility of the compressed area, since all circumferential forces are inhibited at the line of constriction, gives the best condition possible for the building up of healthy scar tissue. The part inside of the constricted area is free from any kind of traction, and the edges of the wound are quite flaccid and tend to fall together.

Of equal importance in the healing process is an avoidance of anything that would tend to depreciate the vitality of the growing cells. The practice of packing a wound with an unabsorbable dressing, such as sterilized gauze, is a familiar example of the continued disturbance of growing granulations wherever such a dressing is removed; not only is the proceeding exceedingly painful, but a layer of germinal tissue is taken away in the dressing to which it has adhered. This, of course, means delay, and what causes delay will eventually show in the final cicatrix. It is urged, too, that germicides in destroying bacteria must in some measure impair the vitality of the surrounding cells; it is considered improbable that the bacterial protoplasm should be killed outright, and that the protoplasm of the neighboring cells should escape untouched.

Many years ago Robinson invented a dressing from cancellous tissue of bone. This is deprived of fats, decalcified and bleached, and forms a soft white sponge-like tissue which adapts itself readily to the soft parts. It is both absorbent and absorbable. Though its utility has been circumscribed and limited, it is still a most serviceable dressing for chronic wounds. It fails in freely secreting wounds, as it does not provide sufficiently for drainage. Robinson thinks that if modified the matrix of bone tissue will ultimately form a basis for dressings.

Bulletin of Canadian Army Medical Corps, Ottawa

August, 1918, **1**, No. 5

11 Enemy Air Raids on Canadian Hospitals, May, 1918. J. G. Adami.—p. 64.
12 *Diagnosis of Chronic Infections with Gonococcus by Complement Fixation Test. F. B. Bowman and P. D. Saylor.—p. 73.

12. **Complement Fixation Test in Diagnosis of Chronic Gonorrhea.**—The specificity of the complement fixation test for gonorrhea is confirmed by Bowman and Saylor. They state that in cases in which a large amount of pus is present and intracellular gram-negative cocci are numerous, a diagnosis of gonorrhea can be accepted. But in cases in which there is no discharge, or very little, with very few bacteria present, a positive diagnosis of gonorrhea cannot be given. Three hundred and eighty-three tests have been made. Of these, 177 were positive; 77 patients gave a definite history of having had gonorrhea, and 60 of these were strongly positive and 17 negative. Of 36 cases diagnosed as epididymitis, 19 were positive, 17 were negative; of 20 cases diagnosed as prostatitis, 14 were positive, 6 were negative; of 21 cases of orchitis, 15 were positive, 6 were negative; of 4 cases of chronic gleet, 3 were positive and 1 negative; 3 cases diagnosed as rheumatic fever were positive; of 26 cases with a clinical diagnosis of myalgia and no clinical evidence of gonorrhea, 8 were positive and 18 negative. A Wassermann test was made on each of these specimens; 25 were positive, and all of these had had syphilis, or clinical evidence of this disease was actually present. The authors found no evidence of cross fixation in this series of tests. The gonorrheal test is never positive in localized anterior urethritis, nor is it usually positive before the sixth week of the disease if no complications are present. A patient should not be considered cured if the test is still positive, even *two months* after the disappearance of all symptoms.

Indian Medical Gazette, Calcutta

July, 1918, **53**, No. 7

13 *Treatment of Malaria. R. Ross.—p. 241.
14 *Quinin Prophylaxis in Malaria. L. Rogers.—p. 249.
15 Treatment of Malaria by Quinin: Failure of Splenox. E. H. Wright.—p. 252.
16 Quinin in Malaria Prophylaxis. K. D. Pringle.—p. 258.

13. **Treatment of Malaria.**—From the results of treating 1,040 old cases of malaria with antirelapse quinin prophylaxis, it would appear that comparatively small doses, amounting to about 60 grains a week, distributed in various ways, reduce relapses to about 10 per cent. of the cases per month, and also diminish the severity of the relapses when they do occur. But 5 grains daily seem less effective and 15 grains daily are no more effective than 10 grains daily and less well borne by the patients. Ross has not been able to note any marked superiority in any one of the three modes of administration of quinin—oral, intramuscular or intravenous—as regards either the speedy reduction of the fever and the parasites (in relapses), or as regards complete sterilization of cases. Harrison's method of using oral and intramuscular administration together is valuable when large dosage is employed. Several medical officers favor complete rest in bed during treatment, even for two or three weeks, especially when large doses of quinin are being given. Generous diet and a little beer or wine are usually given. Arsenic and iron are also favored for the later stages of treatment, but it has not been possible as yet to obtain decisive statistical evidence in support of any of these views. Out of the total of 2,460 cases studied here, 682 or 27.7 per cent. are known to have relapsed either during treatment or afterward.

14. **Quinin Prophylaxis in Malaria.**—Rogers believes that in places where the great majority of the inhabitants are already infected with malaria, as shown by a very high endemic index, quinin prophylaxis has little scope except in the case of European and other immigrants, among whom it

is of the utmost importance, but for the general population full curative treatments with quinin, preferably once a quarter, are necessary materially to reduce malaria.

Quinin prophylaxis to be successful should be based on the following principles: (*a*) A sufficient dose should be given to kill all the invading parasites, so as to avoid the danger of any quinin resisting form surviving and making the fever more difficult to cure. For this purpose not less than 10-grain doses are indicated. (*b*) The intervals between the doses should not exceed two days less than the mean incubation period of the most rapidly developing form of malaria present, which will almost invariably be the malignant tertian variety with a mean incubation period of six days and a minimum of two days. The interval should therefore not be less than four days, and if an epidemic is present this should be reduced to two days. (*c*) The prophylactic doses should be given on two consecutive days as a rule so as to act on the stage most amenable to quinin of each brood of a double infection.

The causes of the frequently reported failures of the two most commonly employed methods are: (*a*) in the case of Koch's biweekly doses on two consecutive days with a five-day interval, that the interval is too long in the case of malignant tertian malaria, especially when of a virulent form; (*b*) in the case of daily 5-grain doses, that the dose is too small to be certain to destroy all the parasites. To be effective as a prophylactic against malaria, quinin should be given in not less than 10-grain doses on two consecutive days, with an interval of not more than four days without the drug, and in highly malarious places the interval should be reduced to two days and the dose increased to 15 grains. Ten grains every other day has also proved successful.

Lancet, London

Aug. 24, 1918, **2**, No. 4956

17 Celiac Disease. G. F. Still.—p. 227.
18 *Treatment of Wounds. J. T. Morrison, J. N. J. Hartley and E. F. Bashford.—p. 230.
19 Postdiphtheritic Paralysis Following Cutaneous Diphtheria. F. M. R. Walshe.—p. 232.
20 Treatment of Staphylococcal Infections by Stannoxyl. A. Compton.—p. 234.
21 *Blood Pressure Measurements: Uses and Limitations in Modern Medicine. E. S. Kilgore.—p. 236.
22 Five Cases of Rapid Death in Young Men. A. Abrahams and N. F. Hallows.—p. 239.

Aug. 31, 1918, **2**, No. 4957

23 Students' Number, 1918-1919.—p. 259.

18. **Treatment of Wounds.**—The Carrel-Dakin treatment of wounds is strongly endorsed by Morrison and his associates. Two hundred cases form the basis of this paper. The first 100 were patients treated in a base hospital in the wards devoted to the most serious cases; the second 100 in the surgical observation hut attached to a general hospital. These last consist of severely wounded men, moribund cases being excluded. Results vary greatly according to whether preliminary surgical treatment is undertaken in the preinflammatory period or after sepsis is established. The cases are therefore divided into (*A*) those patients operated on within twenty-four hours, and (*B*) those without preliminary operative cleansing, or in which this was not done till at least twenty-four hours had elapsed. Far better results were obtained in the Class A cases than in the Class B cases. This method of wound treatment is compared with other popular methods now in use greatly to their disadvantage. The proportion of really successful cases (that is, where secondary suture in the first ten to twelve days permits practically of a return to normal) is higher far than that attained under any other treatment thus far tested. The only other method giving results at all comparable is that of early operation and primary suture with or without the use of brilliant green, bipp, flavine, soap, or other fashionable adjuvants.

The authors conclude their report by saying that the dichloramin-T oil method of wound treatment is simple of application, and the claim that the action of a single application is prolonged is substantiated. The results, even when judged by modern standards, are not to be disregarded. Dichloramin-T oil is not indifferent to granulation tissue or to the skin edges of wounds, but has, especially if used for a long time, a deleterious action on both. The ingrowth of skin is retarded, and the natural tendency for granulation tissue to disorganization is aggravated. The use of an oily menstruum does not altogether prevent the adhesion of dressings to the surface or obviate the repeated, if minute, insult to the tissues inseparable from each dressing. Though an improvement on some other methods in vogue, dichloramin-T oil has not yielded the improvement on neutral solution of chlorinated soda that was anticipated, perhaps because it is neither innocuous to healthy granulation tissue, nor a solvent of dead tissue; perhaps, possibly, because an oily application is not so efficacious as a watery solution in the treatment of wounds.

21. **Blood Pressure Measurements.**—Experience has shown great practical clinical value of blood pressure measurements in connection with a limited number of conditions, namely, arterial and renal diseases, cerebral pressure, pregnancy toxemias, Addison's disease, and, to less extent, aortic insufficiency. Before attributing pathologic significance to the measurements, however, Kilgore says, wider normal limits (both systolic and diastolic) should be recognized than those generally indicated in the books. Figures from normal young adults are presented in substantiation of this statement. An important and little known application of the blood pressure apparatus is its use in the detection of pulsus alternans. It is urged that systolic pressure be retained as the most important measurement, and that the simple palpatory technic be used. Blood pressure determinations in general have fallen short as clinical indicators of circulatory function. Pulse pressure, and consequently the various formulas in which it is involved, depends on too many factors to be a very useful index for any of them. Great variation is shown among pulse pressure measurements of normal persons. The same criticism is shown to be applicable in the case of the auscultatory tone phases.

Archives Médicales Belges, Paris

August, 1918, **71**, No. 8

24 *Tropical Diseases in the Balkans. A. Castellini.—p. 145.
25 *Tuberculous Otitis Media. F. Tits.—p. 168.
26 Treatment of Tuberculous Adenitis. L. Lecrenier.—p. 176.
27 Work in Treatment of Tuberculosis. Faniel.—p. 183.
28 Tenotomy and Flail Joints. A de Marneffe.—p. 191.
29 Present Status of Lobar Pneumonia. Van Reeth.—p. 195.

24. **Malaria and Other Tropical Diseases in the Balkans.**—Castellani comments on the wide variety of clinical pictures presented by malaria in the Balkans. This is puzzling for medical men not familiar with tropical diseases. There is no internal disease that malaria may not simulate, and it may even induce a set of symptoms deceptively suggesting acute surgical affections. He reviews his experience and relates typical cases of each type, including pseudopurpura, sleeping sickness, cholera, cirrhosis, appendicitis, cholecystitis and pancreatitis—for all of which malaria was responsible, as also in 90 per cent. of some epidemics of alleged typhus. Among diseases other than malaria, trench foot has been encountered, like that in France, spirochete bronchitis and jaundice. Dysentery, typhoid and tropical skin diseases are common, as also pellagra in certain parts of Macedonia.

25. **Tuberculosis of the Middle Ear.**—The young soldier had been at the front for two years, apparently healthy, when otitis media developed and proved to be of tuberculous origin, secondary to an unsuspected lesion in the lung. Tits is convinced that tuberculosis would be found responsible for otitis media in a larger proportion of cases if it were suspected in the torpid chronic cases that have no acute onset. He warns further that examination may give negative findings as in this case. Only when the examination was repeated several times were the results conclusive.

Bulletin de l'Académie de Médecine de Paris

Sept. 3, 1918, **80**, No. 35

30 *Comparative Resonance of Tuberculous Apex. E. Boinet.—p. 196.
31 *Mumps. L. Captan.—p. 197.
32 *Aeroplane Surgical Unit. A. Nemirovsky and Tilmant.—p. 202.
33 *Syphilitic Peritonitis. M. Letulle.—p. 209.

30. **Resonance of the Apex.**—Boinet describes how percussion can be made most instructive to detect changes in the resonance and transsonance of the apexes.

31. **Mumps.**—Capitan analyzes his experiences with 700 cases of mumps in the troops. Careful bacteriologic examinations demonstrated, he says, that mumps is a polymicrobian infection of the blood. In some of the cases lymph nodes below the salivary glands became swollen and even suppurated, and bronchitis up to pneumonia was also occasionally encountered as part of the clinical picture. The spleen was almost invariably enlarged. Orchitis was observed in 16 and 15 per cent. of the cases before 1918, but during this year the proportion has been 25 per cent. The disease has been a little graver on the whole this year, and the complications more frequent. In some rare cases there was a rubeola-like eruption, and in six cases meningeal symptoms developed, relieved by lumbar puncture. All these complications of mumps proved mild. The early hypertrophy of the spleen may aid in the differential diagnosis.

32. **Aeroplane Surgical Unit.**—As mentioned in the Paris Letter, page 1155, a flying surgical unit has been devised by Nemirovsky and Tilmant. The specifications were filed with the Ministère des Inventions, Feb. 21, 1918. The success of the aeroplanes devised to carry the wounded to the surgeon soon suggested the advantages of conveying the surgeon to the wounded, and this "aerochir" is the result. It aims to bring to the first aid stations, to advanced posts without roentgen equipment, a well equipped surgical and roentgen outfit, and aid advanced posts overwhelmed by the influx of wounded beyond what they had been organized for.

The aerochir is designed to carry, besides the pilot, a surgeon and a radiologist to serve as assistant to the surgeon, and all the roentgen and surgical material for all kinds of interventions. The motor of the plane can supply the power for the roentgen current with the interposition of a small transformer and interrupter. It can serve also for electric sterilization, or a storage battery can be utilized for this. The apparatus are light and portable so that they can be readily carried into a first aid post or other surgical station and set to work at once, or they can be used in connection with the aerochir itself. The apparatus are not described in detail, but the advantages of a flying radiosurgical unit, alone or in squadrons, are emphasized, especially the rapidity with which surgical aid can be brought, the fact that the roads are left free just at the time when they are liable to be most clogged, the speed of transit and the fact that the wounded is spared the transportation, having aid brought to him in the swiftest and most complete manner. In urgent periods the aeroplane could return to headquarters for a new outfit, so that one or two of these aerochirs could serve for 200 kilometers of the fighting front and no spot would be more than two hours away when summoned by telephone. The radioscopic and radiologic manipulations not requiring the patient to be undressed could be done in the aeroplane itself. With the cap devised by Dr. Mondain to be used with Nemirovsky's compass, the projectiles can be located in full daylight. This compass as well as any surgical instrument needed can be placed in the aeroplane without cumbering it.

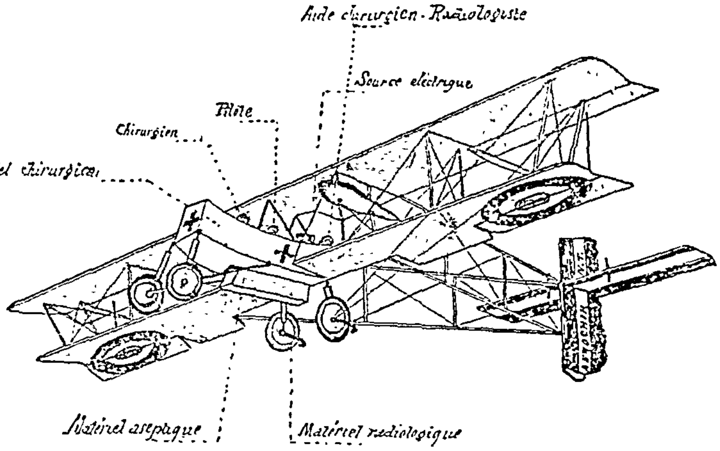


Fig. 1.—Roentgen-surgical aeroplane "Aerochir."

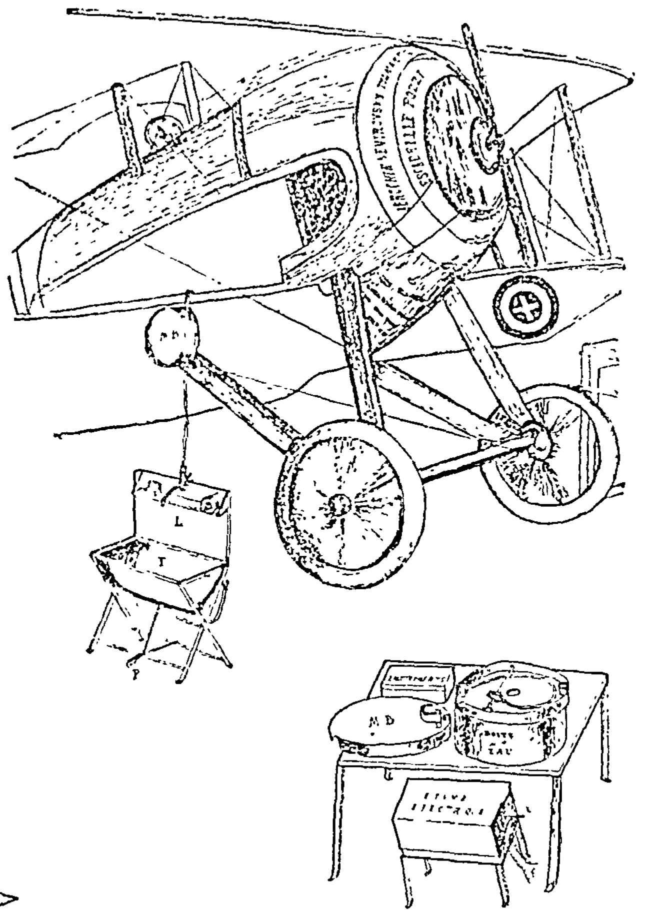


Fig. 2.—Folding washstand, instrument stand and electric sterilizer.

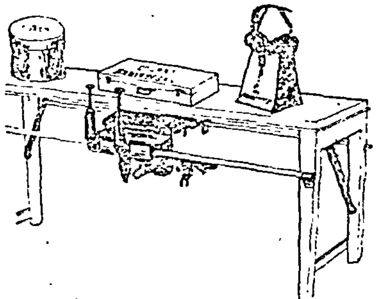


Fig. 3.—Roentgen table with compass for locating projectiles.

33. **Syphilitic Peritonitis.**—Letulle devotes twenty-one pages to this preliminary communication on the frequency of syphilis as a factor in the development of ascites with cirrhosis of the liver. In a recent series of 152 cases of cirrhosis of the liver he found the Wassermann test positive in about 49 per cent. of the cases. His research has further demonstrated that the peritoneum is frequently the favorite culture soil for the syphilis spirochete. Syphilitic peritonitis is usually secondary to some inflammation of the liver, either a syphilitic affection of the liver or simple diffuse cirrhosis hitherto erroneously ascribed exclusively to abuse of alcohol. This secondary syphilitic peritonitis may extend throughout the whole peritoneum, but as a rule it is partial, circumscribed in special regions, around the liver, cecum, colon, etc. Whatever the extent of the lesions and their microscopic texture, this specific seritis, as he calls it, long respects the structural integrity of the organs which it covers with its fibroid shell, but finally they may become involved in its cicatricial retractions. These retractions and the consecutive atrophy at points of the peritoneum may entail redoubtable complications, and

their true nature and the outlook should be understood in the study of abdominal pathology. He gives illustrations of some typical findings; the chronically inflamed serosa throws up a hypertrophic sclerosis, and from this exudes the progressive ascitic effusion so familiar to the clinic.

Bulletins de la Société Médicale des Hôpitaux, Paris

May 24, 1918, **42**, No. 18

34 *Lethargic Encephalitis. A. Chauffard and M. Bernard.—p. 470; Histologic Findings. P. Marie and C. Trétiakoff.—p. 475.
35 *Tardy Relapse of Meningitis. E. de Massary and L. Tockmann. —p. 480.
36 Malarial Meningitis. G. Paisseau and J. Hutinel.—p. 484.
37 *Eosinophilia in Pleural Effusions. M. Petzetakis.—p. 487.
38 *Cholesterol in Joints. M. Loeper and G. Verpy.—p. 496.
39 Transient Exophthalmic Goiter After Typhoid. G. Faroy.—p. 499.
40 *Icterohemorrhagic Spirochetosis. Costa and Troisier.—p. 502.
41 Peripheral Paralysis After Typhoid. Cestan and Others.—p. 506.
42 Polyneuritis or Hemiplegia After Paratyphoid. R. Cestan and Others.—p. 508.
43 Hemiplegia Complicating Typhoid. R. Cestan and Others.—p. 510.
44 *Hemolytic Index of Serums. de Verbizier and Marchand.—p. 512.
45 *Valvular Disease and Fitness for Service. A. Clerc and H. Aimé.—p. 516.
46 *Intraspinal Lavage in Meningitis. G. Rosenthal.—p. 521.

34. **Lethargic Encephalitis.**—In the first of the two cases reported the young woman died the ninth day after the first symptoms, diplopia, slight headache, with complete bilateral ptosis the third day, with increasing somnolency. The other young woman was four months pregnant, and the symptoms at first were profound apathy, immobility of the facial muscles, catatonic retention of attitudes, and torpor to such an extent that she seemed to be constantly asleep with the eyes open, but there were no ocular symptoms. There was a slight rise in temperature the sixth week and the woman died at the end of the seventh week. In the discussion, Netter emphasized the differences between this lethargic encephalitis and poliomyelitis, and stated that the British have already reported 105 cases. Marie described the histologic findings in the above two cases. To the naked eye the brain seemed normal, but the microscope revealed in both a small focus of subacute inflammation in the locus niger (substantia nigra or intercalatum), spreading toward the ganglions of the base and to the gray matter close to the ventricle in the protuberance and the bulb. The lesion was strictly limited to the juxtaventricular gray matter, the nuclei around being apparently sound.

35. **Tardy Relapse of Meningitis.**—The relapse occurred four months after defervescence, but the man had not felt well in the interim. The relapse occurred after antityphoid inoculation, and the case suggests that men who have had meningitis should be spared the antityphoid inoculations. During his convalescence he presented the symptoms and aspect of general paresis, and recovery was very slow. He was finally discharged as unfit for duty.

37. **Pleural Effusions.**—Petzetakis explains that the eosinophils and basophils found in an aseptic pleural effusion are formed on the spot at the expense of the polynuclears, etc., of the effusion. He calls this *eosinoplassic*.

38. **Cholesterol Deposits in Joints.**—Loeper and Verpy found deposits of cholesterol crystals in the connective tissue, synovia, and in the synovial fluid in a man of 47 with deform- ing polyarthritis of the fingers and wrist who had succumbed to aortitis. There were also similar deposits in the aorta. Cholesterol deposits were also found in a soft tumor from a woman of 39 with old and extensive deforming rheumatism. In a third case the man had gouty tophi in addition to the deforming rheumatism. In a hygroma removed from the shoulder, there was an enormous proportion of cholesterol crystals with uric acid crystals. They add that to determine the nature of a deforming rheumatism it may be necessary to apply chemical tests to the deposits in the joints. Treat- ment would vary then according as the tests reveal, singly or combined, carbonophosphates, oxalates, uric acid or cholesterol.

40. **Icterohemorrhagic Spirochetosis.**—Two more cases are reported of the meningeal form with subjaundice, with complete recovery.

44. **Hemolytic Index.**—De Verbizier and Marchand discuss the hemolytic index of human serums in connection with the "rapid" technic for the serodiagnosis of syphilis. Their research in 300 cases has confirmed the conclusions of Hecht-Weinberg in respect to the necessity for ascertaining the hemolytic index as a preliminary to the test.

45. **Valvular Disease and Fitness for Service.**—Clerc and Aimé comment with approval on the recent regulations which specify that men with valvular disease should be dismissed from the army temporarily or permanently as the commanders are unable to maintain a stable system for sedentary limited service. Occasionally this may deprive the army of the services of some man who might have stood the strain, but the army as a whole has only gained by it. In the present condition of things it is better to renounce a few than to expose the large number of men with valvular disease to the nefarious consequences of the strain of army life.

46. **Intraspinal Lavage.**—Rosenthal reports a case of cerebrospinal meningitis with the *Meningococcus crassus* which confirms the advantages of rinsing out the spinal cavity with saline and citrate solution. The solution is introduced until it comes away clear, first the 38 per cent. solution of sodium citrate; then simple saline; then the chlorocitrate solution: 7 gm. of sodium chlorid and 8 gm. of sodium citrate to the liter. A very fine needle is introduced inside the ordinary lumbar puncture needle, thus ensuring the two-way current. In the case described, the thirty-first lumbar puncture showed normal spinal fluid, confirming the clinical recovery, over two months after the first symptoms. Disinfection of the nasal fossae formed part of the treatment. The disease had run its course in waves.

The spinal cavity is rinsed out with the simple saline, introducing it 20 c.c. at a time. With patience, up to 100 or even 160 c.c. can thus be used to flush the spinal cavity, using the chlorocitrate solution only for the last two syringefuls. Sodium citrate checks the production of false membranes, and a little of the chlorocitrate solution is left in the spinal cavity at last to facilitate this action. The strong citrate solution is liable to cause transient pain, and hence should be rinsed out carefully.

Journal de Chirurgie, Paris

July, 1918, **14**, No. 6

47 *Cicatricial Stenosis of Esophagus. L. Sencert.—p. 553.
48 Resection of Left Angle of Colon for Cancer. Desmarest.—p. 575.

47. **Cicatricial Stenosis of the Esophagus.**—Sencert refers to absolutely impassable stenosis or stenosis which is not constantly and easily permeable. The simple, effectual and certain treatment for such cases, he declares, is a gastrostomy with retrograde "endless" dilatation. He describes in detail how to overcome the difficulties encountered in this, with typical cases from his total experience with fourteen cases. One illustration shows the cardia as seen by direct gastroscopy through the gastrostomy opening. Another shows the young man with the thread left emerging from this opening and through the mouth.

Lyon Médical

July, 1918, **127**, No. 7

49 Case of Atypical Tetanus. Roubier.—p. 289.
50 Variola at Lyons in 1917. Bonnamour.—p. 299.
51 Low Blood Pressure and Tachycardia in the Gassed. Piéry.—p. 321.

Paris Médical

July 13, 1918, **8**, No. 28

52 Abdominal Pain with Chronic Amebiasis. E. Deglos.—p. 33.
53 *Shock. G. Blechmann.—p. 38.
54 *Autogenous Vaccine for Brain Wounds. A. Moulonguet.—p. 41.
55 Recording Register for Joint Function. Dausset.—p. 44.

July 20, 1918, **8**, No. 29

56 *War Wound of Knee. Monprofit and L. Courty.—p. 49.
57 *Treatment of Psychoses with Convulsions. G. Aymes.—p. 56.

53. **Shock.**—In order to get a better idea of the nature of shock, Blechmann has had each case investigated and the data recorded on a systematic plan. The chart listed each of the seven reflexes tested, the oscillometer maximal and minimal pulse, the oculocardiac reflex, the blood viscosity, coagulation and hemoglobin, lumbar puncture; white der-

mographism, etc.—over forty kinds of data from the examination being thus recorded on the chart by a uniform plan as the patient is being undressed, heated and morphinized. The oscillometer is particularly convenient for repeated determination of the blood pressure in the wounded, as it can be applied to wrist or ankle. On each chart is recorded also the clinical impressions of the phases through which the patient passes. These records have aided in establishing that the state of shock is not due to the hemorrhage or to any single cause but to the combination of the concussion, the pain, hemorrhage, etc., and superposed on these the anesthesia, the operative shock and toxi-infection. He adds that Crile's and Roger's researches have proved the Ariadne's thread that has led us at least to warm up the wounded and give some preoperative treatment, watching over the evolution of the shock by the behavior of the blood pressure.

54. **Autogenous Vaccine for Brain Wounds.**—The pulsation in the brain aids in the expulsion of small splinters and foreign bodies, but the brain has very little power of defense against infection. To enhance this by an autogenous vaccine specially prepared to act on brain tissue, Moulonguet took the microbes for it from the brain lesion itself, and added human or bovine brain tissue to the culture medium. The twenty-four hour culture was emulsioned in physiologic solution and heated to 60 C. for an hour. This brain autovaccine was then administered by subcutaneous daily injections. One culture tube provided three ampules, and he injected half an ampule the first two or three days and then a whole ampule after this. He has applied this treatment only in three cases to date, but the improvement was so marked under it, as he describes in detail, that he does not wait for further confirmation to commend this treatment as a prophylactic measure after an operation on the brain, to prevent the development of infection or aid in curing it if it has developed, especially in cases of subacute and chronic encephalitis, and after operative treatment of a tardy abscess in the brain developing around a splinter or projectile. He adds that this vaccine may render good service also after an operation on a brain abscess of otitic origin, or in preventing its development.

56. **Perforating Wounds of the Knee.** — Monprofit and Courty tell how during the first years of the war arthrotomy, even very extensive, gave such bad results with wounds of the knee that many of the men evacuated apparently in good condition had to be amputated in the reserve hospitals. Much better results were realized when, instead of opening up the joint widely, it was merely punctured to release the extravasated blood and effusion, or extract the projectile with the least possible injury to the tissues, and then sutured and immobilized. The synovial membrane does not stand well exposure to the air, and the joint heals far better when the synovialis is sutured at once with catgut and the skin with silk. When the bones are so injured that resection is necessary, it should be the typical resection. This averts amputation, drains well and gives good orthopedic results. In his 16 cases the cure was complete in 15, one man requiring amputation on account of tetanus. In Tuffier's 108 cases of resection the knee was firm with slight mobility in 11 cases, with complete ankylosis in 93; the joint was loose in 5 cases.

57. **Treatment of War Psychoses with Convulsions.**—Aymes has been impressed with the improvement under calcium chlorid associated with a hypnotic in treatment of war psychoses with convulsions. He describes the details of the twelve cases given this combined treatment.

Presse Médicale, Paris

Aug. 8, 1918, **26**, No. 45

58 *Daughter Echinococcus Cysts. F. Dévé.—p. 413.
59 *Sepsis from the Mouth. Dufourmentel and L. Frison.—p. 145.
60 Extension Treatment of Bones in Hand. Lance.—p. 416.

58. **Echinococcus Cysts.**—Dévé describes the origin of and the pathogenic conditions inducing daughter cysts, saying that so long as the mother cyst is in a quiescent state there is no production of daughter cysts until the mother cyst is growing very old or its contents become infected or stained with bile, or the fluid contents are evacuated. All of these causes become more likely with the increasing age of the cyst. It is important to ward off these different causes for production of daughter cysts, especially refraining from puncture. The cyst should be removed at the earliest possible moment, and we should seek for echinococcus cysts in dubious cases, even in children, as a routine measure. Many cases of cysts in adults date from childhood.

59. **Sepsis of Buccal Origin.**—The three cases reported proved fatal. In one there was a toxic cellulitis of the neck, and in one phlebitis of the craniofacial vessels. The primary lesion had been an acute gingivitis or abscess at the root of a tooth, and the resulting septicemia proved fatal in from two to eighteen days.

Progrès Médical, Paris

June 29, 1918, **33**, No. 26

61 *Cholesterol Deposits in Joints. Loper and Verpy.—p. 221.
62 *Soldiers' Irritable Heart. A. Clerc and H. Aimé.—p. 222.

July 6, 1918, **33**, No. 27

63 *Retarded Primary Suture of War Wounds. A. Chalier.—p. 229.
64 *Traumatic Lesions of the Arteries. G. Jeanneney.—p. 230.

61. Summarized in abstract 38.

62. **Soldiers' Irritable Heart.** — Clerc and Aimé discuss recent literature on this subject. A hyperexcitability of the entire sympathetic system seems to be the actual cause of the irritable heart and the instability of the circulation and secretory processes which generally accompanies it. A constitutional predisposition or the effect of some infection is the primary factor.

63. **Primary Suture of War Wounds.**—Chalier insists that it is possible to apply the primary suture even as late as twelve hours after the wound when clinical observation shows that the wound is little if any infected. In 32 cases he operated and sutured between the thirty-fifth and fortieth hour in 3; to the forty-eighth hour in 9; third day in 7; and from the fourth to the eleventh day in 13. In only 3 of the total 32 was it necessary to open up the wound again. In all the others the scar was linear and supple as with the finest early sutures. A number of the men returned to the front in less than a month, and yet the wounds had been serious ones, some including the skull, others large arteries; in 17 cases projectiles had to be extracted.

64. **Traumatic Lesions of Arteries.**—Jeanneney expatiates on the convenience and advantages of the Pachon oscillometer as a means to estimate the blood pressure and the diagnosis and prognosis of war wounds of arteries. Some lesion of the artery may be assumed when the oscillometric curve is lower and shorter than on the sound side. It shows whether the circulation below a ligature is growing better or worse, and thus is a guide to treatment and for the prognosis. Besides its practical value along these lines, it throws light on the vasomotor mechanism of the phenomena accompanying vascular lesions.

Correspondenz-Blatt für Schweizer Aerzte, Basel

Aug. 17, 1918, **48**, No. 33

65 *Paroxysmal Tachycardia. O. Roth.—p. 1089.
66 The Physiologic Concomitant Reflexes. A. Rodella.—p. 1102.
67 Personal Prophylaxis of Diphtheria. F. Brandenberg.—p. 1106.
68 *Influenza. E. Lanz.—p. 1108.

65. **Paroxysmal Tachycardia.**—Roth describes five cases of sinus tachycardia, and says that in all he was able to arrest the attack of tachycardia by applying mechanical irritation to the vagus nerve. The simplest method for the purpose was found to be compression of the cervical portion of the vagus nerve. To ward off recurrences he gave small doses of a preparation of digitalis three times a day.

68. **Influenza.**—Lanz comments on the frequency of pneumonia in the present epidemic of grip. The rusty sputum of pneumonia and a crisis are seldom observed, but reduction of the chlorids in the urine and their return to normal at once when the process is arrested are reliable bases for diagnosis and prognosis. No benefit was derived from acetylsalicylic acid, optochin or salvarsan, but a mixture of digitalis, sodium salicylate and antipyrin salicylate every two hours seemed to check the spread of the pneumonia process by the intense

external male pseudohermaphrodite, but the general aspect was altogether feminine. The swelling in the groin was the undescended testicle. Two of the three sisters were of the same external male pseudohermaphrodite type, and probably likewise a maternal aunt. Lunden discusses the physician's conduct in such cases of *erreur de sexe*. He advocates removing the testicles, as they are liable to undergo malignant degeneration. The patient should be informed, he thinks, that there is malformation which would prevent child bearing, and consequently that she should not marry. It is better not to specify the nature of the malformation.

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102 *Phenolsulphonephthalein Test of Kidney Functioning. K. Motzfeldt.—p. 729.
103 *Treatment of Eclampsia. K. Brandt.—p. 765.
104 *Double Uterus Bicornis. K. Haugseth.—p. 781.
105 *Invagination of Child's Intestine. N. Barth.—p. 784.
106 Breaking Up of Pleural Adhesions. W. Holmboe.—p. 799.

102. **Phenolsulphonephthalein Test of Kidney Functioning.**—Motzfeldt reviews the literature on the phenolsulphonephthalein test and his own experience with 212 applications of the test on 136 patients at the Rikshospital. Only 61 of the patients had kidney disease. In 54 with sound kidneys, from 40 to 70 per cent. was eliminated during the first two hours: the average was 65 per cent. and it was never below 50 per cent. The elimination was entirely independent of the amount of urine during the two hours, the percentage keeping the same when the subjects had been drinking a liter of water half an hour before the test, as also in a case of renal dropsy in which the output of urine increased from 1,500 c.c. one day to 8,000 c.c. a few days later. The phenolsulphonephthalein output was 35 per cent. on both these days. The findings in the 61 patients with nephritis are tabulated under different headings, and are compared with the symptoms observed.

He extols the simplicity and reliability of the test; a positive response testifying to functional impairment of the kidneys. Nephritis may exist without appreciable functional impairment, and hence negative findings do not exclude nephritis. He found evidences of retention of nitrogen in every case when the output of the phenolsulphonephthalein was below 25 per cent. The test is thus peculiarly useful in differentiating between the true and the spurious form of uremia, the *azotémic* and *chlorurémic* of the French writers. On the other hand, there is no connection between the elimination of phenolsulphonephthalein and albuminuria, edema or high blood pressure.

103. **Eclampsia.**—Brandt analyzes the twenty-seven years' record of the Christiania obstetric and gynecologic clinic. It includes 431 cases of eclampsia. In the 156 cases since 1906, there was a mortality for the mothers of 14.1 per cent. and for the children of 27.3 per cent. in the 121 cases in which the eclampsia developed before or during labor. The figures are, respectively, 25.7 and 2.5 per cent. in the cases with postpartum eclampsia. The Stroganoff prophylactic method is applied as the routine measure, that is, keeping the woman under the influence of moderate doses of morphin and chloral and protecting her against noise and light. Venesection is done when necessary, and also lavage of the stomach. Otherwise she is left in peace. If the convulsions keep up, Brandt does not push this Stroganoff method to the extreme, but delivers the woman under deep ether anesthesia, with forceps, cesarean section or otherwise as indicated. One great advantage of the Stroganoff treatment is that the general practitioner can apply it with the help of the obstetric nurse, who can keep him posted by telephone as to the patient's condition. Some recent German publications report from the Charité at Berlin 17.2 per cent. mortality in 501 cases of eclampsia, before 1912, given purely operative treatment. Since then, 168 cases given the Stroganoff and venesection treatment showed a mortality of 14.3 per cent. for the mothers and 36 per cent. for the children. Pregnancy eclampsia was found to give the most unfavorable results. Bumm also has reported that operative treatment has not fulfilled expectations, and since 1911 treatment has been expectant. The pure Stroganoff treatment in his hands gave 44 per cent. mortality. The total mortality in 567 cases was 17.3 per cent. Necropsy revealed irreparable changes in liver, kidneys and brain. It is stated that venesection is called for only in pregnancy eclampsia. In institutions, primary operative treatment seems to be preferable.

104. **Double Uterus.**—In removing an ovarian cyst, Haugseth accidentally discovered that there was a duplex uterus bicornis with vagina septa. The woman had had seven pregnancies with five living children. The pregnancies had evidently alternated in the halves of the uterus.

105. **Intussusception in Children.**—Barth became convinced in 1902 that he had overlooked some cases of intussusception, and since then he has been on the lookout for it in every small child brought to him on account of gastro-intestinal disturbance. He has thus encountered five cases in recent years. In two he succeeded apparently in reducing the invagination but the child died in twenty-four or forty-eight hours. In another case the invagination was of several days' standing and the laparotomy came too late to save the child. Another child had evidently had repeated attacks of invagination which had spontaneously corrected itself. In the latest attack the bowels were flushed with water. Then the invagination was easily corrected through a laparotomy but the child collapsed and died next day, probably from absorption of virulent infectious matter by the damaged mucosa. It is evident that nonoperative measures cannot be counted on after twenty-four hours and, on the other hand, a laparotomy gives the best results when done within twenty-four hours. Even when the invagination seems to have been corrected, it may merely have slid behind the liver. Necropsy revealed this in four of Bloch's cases. Or the invagination may have been corrected, but the swollen bowel and mesentery may simulate a tumor. Passage of flatus and stools is the best sign of reduction of the invaginatum, but this does not occur for several hours. Bloch flushes the bowel with water and measures the quantity of water that can be introduced and flows out again. If the intussusception still persists (ileocecal and colon) only from 50 to 500 c.c. will run in, while if the invaginatum has been reduced, up to a liter will flow in and out. This may aid in locating the tumor, as with an invaginatum in the small intestine as much as a liter will run in and out without any change being apparent in the tumor.

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107 *The Blood in Scarlet Fever. S. Baastrup.—p. 1121.
108 Artificially Carbonated Baths. S. Marcussen and A. Faber.—p. 1142.

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109 *Traumatic Lumbago. K. Malling.—p. 1177.
110 *The Coarse Bread Question. M. Hindhede.—p. 1182.

107. **The Blood in Scarlet Fever.**—Baastrup tabulates the hematologic findings in fifteen patients with infectious sore throat; in ten with scarlet fever with the blood examined repeatedly during the whole course of the disease, and in eighty-seven scarlet fever patients whose blood was examined at different times during the disease. It is evident that the pronounced leukocytosis and eosinophilia even from the first will aid in differentiating scarlet fever from infectious sore throat. Leukocytosis with very few or no eosinophil cells, turns the scale in favor of simple angina. After defervescence, the combination of leukocytosis and eosinophilia will permit the retrospective diagnosis of scarlet fever. Neither alone is decisive, but the presumption still is in favor of scarlet fever.

109. **Traumatic Lumbago.**—Malling warns against casual remarks which may sow the seed of a traumatic neurosis. He admonishes further that roentgen examination may clear up these cases surprisingly. In some cases described this revealed actual injury of a vertebra. In three of the cases there was history of an external trauma; the pain had developed after lifting a heavy weight or slipping on ice.

110. **The Coarse Bread Question.**—Hindhede replies to Leersum and other critics of his publications on the assimilation of coarse bread. A number of them have been summarized in these columns during the last two years.

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INSANITY VERSUS MENTAL DISEASES

THE DUTY OF THE GENERAL PRACTITIONER IN PSYCHIATRIC DIAGNOSIS [*]

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BOSTON

The time has come when the general practitioner must assume responsibilities new to him: he must become as much a psychiatrist as he is specialist in other directions.[1] But how specialistic, it may be asked, is the general doctor-man to be? *Quien sabe?* And times change. But so much is certain: The general doctor-man does not know as much about psychiatry either as he should know, or as he has command of, let us say, pediatrics, gynecology or dermatology. Science, C. S. Peirce defined, I believe, as the range of ignorance. Well, the general practitioner's range of ignorance *re* psychiatry is altogether too wide for his own conscience's comfort and disastrously wide for the good of society.

All this can now be shouted from housetops by reason of what the layman terms "shell shock," a problem for medicine no less wide than the whole of clinical neurology and psychiatry, the field we are coming to know as neuropsychiatry.[2] But already before the shell shock alarums, the American general practitioner had become responsible in these matters for more than his father had to be. In 1906 the state of Michigan had laid down its psychopathic ward at Ann Arbor and placed in control of it a specialist novel in training, functions and scope. Now, it is safe to say, no state can hold up its head in a place of the highest honor in civilization without establishing a psychopathic hospital. The commonwealth of Massachusetts, in 1912, followed the lead of Michigan. Private endowment allowed in 1913 the establishment in Maryland of another institution in which the scientific point of view made use of physicians, psychologists and trained lay workers for the high modern purposes of mental hygiene. Meantime, societies for mental hygiene had been established,[3] and doubtless others are now moving. The yeast is working, too, in the National Conference of Social Work; and just as "charities and correction" has fused and crystallized into "social work," so the former committee of that body on "feeblemindedness and insanity" has now crystallized into a committee on "mental hygiene." The medical man who does not some year attend a meeting of the National Conference of Social Work[4] will sooner or later wake up to reckon without his host—the social worker. In brief, no sign fails to point to an increasing demand for more medical service, as well as for more service of every technical sort, for the psychopath.

But what exactly ought the general practitioner to do for his instruction in modern psychiatry? He looks back at a meager training. He was by law as a rule excluded for a period of years from whetting his mind on medicolegal problems of commitment: the law somehow permitted him to remove an appendix the moment he passed his state board examination, but the law required experience and a partner in the matter of certifying insanity. Again, early in this century a flood of Teutonic verbiage overflowed the field, and the graduate doctor who ventured inside an asylum hastily beat a retreat when *Merkfähigkeit* raised up its head or *Dämmerzustand* closed down over all. Of course various clearly written books gave the main facts (de Fursac,[5] Dercum,[6] Diefendorf,[7] Peterson,[8] White,[9] et al.); but there was little in the medical school memories of most men to tie these facts to, except a few *curiosa* of dismal asylum walks and some medicolegal stories too mature for the nonsocialized medical student to grasp in their proper relations. Am I painting this picture too dark? Now and then at the apex of a particular career some outstanding man is able to prevail on medical colleagues to give him enough curricular time to do the topic justice; but on the whole, even in so-called Class A medical schools, either the ignorance of committees, or curricular pressure, or remoteness of clinical material, or an overripe professional point of view, has killed in embryo the medical student's chances of learning much about psychiatry.

I consider and propose that all general practitioners who feel at a loss how practically to use the relics of their psychiatric training or the products of their reading in such books as the above mentioned should as soon as possible spend at least a week in contact with the clinical material of some institution like the Ann Arbor Psychopathic Ward, the Boston Psychopathic Hospital, or the Henry Phipps Psychiatric Clinic at Baltimore. I specify these institutions, not because the state institution men are unable to give in some instances even more valuable instruction, but because the specified institutions have contact with the acute, curable, incipient and dubious cases that most resemble the most important psychiatric material of general practice. I have not the slightest doubt that the authorities of the specified institutions would not only tolerate but actually welcome the arrival of the general practitioners for such study purposes. I am sure that the general practitioner who comes for a week will want to stay a month and will certainly come back for more.

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[*] Read before the Section on Nervous and Mental Diseases at the Sixty-Ninth Annual Session of the American Medical Association, Chicago, June, 1918.

[*] Because of lack of space, this article is abbreviated in THE JOURNAL. The complete article appears in the Transactions of the Section and in the author's reprints.

[1] To show the popular interest in these topics, see any numbers, especially Current Bibliography, of Mental Hygiene, published quarterly by the National Committee for Mental Hygiene, Inc., 50 Union Square, New York City.

[2] See remarks in the Sattuck Lecture for 1918: Southard, E. E.: Shell Shock and After, Boston Med. and Surg. Jour., 1918, **179**, 74.

[3] Connecticut, 1908; national, 1909; Illinois, 1909; New York, 1910; Massachusetts, 1913; Maryland, 1913; Pennsylvania, 1913; North Carolina, 1913; Dayton, Ohio, 1914; District of Columbia, 1915; Alabama, 1915; Louisiana, 1915; California, 1915; Rhode Island, 1916; Ohio, 1916; Tennessee, 1916; Missouri, 1916; Indiana, 1916; Iowa, 1917; Virginia, 1917.

[4] Proc. National Conference of Charities and Correction, especially for 1915, Baltimore; 1916, Indianapolis; 1917, Pittsburgh; 1918, Kansas City (name now changed to National Conference of Social Work).

[5] De Fursac: Psychiatry, translated by Rosanoff, latest edition.

[6] Dercum: A Clinical Manual of Mental Diseases, 1917.

[7] Diefendorf: Clinical Psychiatry: A Textbook for Students and Physicians.

[8] Peterson, in Church and Peterson: Nervous and Mental Diseases.

[9] White, W. A.: Outlines of Psychiatry.

WHAT THE GENERAL PRACTITIONER SHOULD KNOW OF PSYCHIATRY

I want now to sketch the main features of the psychiatric landscape as I think it should be commanded by the general practitioner.

First, the general practitioner ought to become something of a *psychiatrist* and not in the first instance try to become an *alienist*. I am here making a somewhat unfamiliar distinction. In Table 1 I summarize in parallel columns the line of distinction as I think it might well be drawn.

I recently discussed somewhat fully the intricacies of the foregoing parallel column.[10] The point here rather is to ask how much of the field of mental disease, medically considered, the general practitioner ought to have in his range. I suppose there can be no doubt that the general practitioner ought to know relatively as much about psychiatry as he does about the sixteen or seventeen other main groups of topics that we denominate practical specialties. A general practitioner must be *general* in that he has actually more command of all the specialties than any one of the specialists is likely to have concerning the same topics. The general practitioner must at least have the function of being able to specify the right specialist or specialists to call in consultation. If by chance the general practitioner is himself something of a specialist in pediatrics or certain aspects of internal diseases (and surely every general practitioner ought to be something of a specialist in some direction if only to gauge his knowledge concerning general medicine), it is so much the better for the fate of the particular child or adult whose illness is in question. But we do not demand of the general practitioner a fine capacity in the diagnosis of skin diseases or of the minutiae of ophthalmology and otology. Up to recent times, we have not demanded from the general practitioner a knowledge of so much about mental diseases as we have often been able to demand for diseases of the skin, the ear or the eye. The time has come when the general practitioner must assume responsibility in this direction. Even at the expense of postgraduate work on the topic, the general practitioner is going to fail who does not proceed to acquire a grasp on the main conceptions of psychiatry.

TABLE 1.—LINE OF DISTINCTION BETWEEN ALIENIST AND PSYCHIATRIST

ALIENISTS	PSYCHIATRISTS
Field: insanity, the insane	Field: psychiatry, the mentally diseased.
Field: public, governmental, legal	Field: social, private, medical.
Field: *opinion for court* use	Field: medical, psychologic and social diagnosis and treatment.
Decisions *alternative:* Sanity versus insanity	Decisions selective: e. g., syphilitic, feebleminded, epileptic, alcoholic, coarse brain disease, symptomatic, senescent-senile, schizophrenic, cyclothymic, psychoneurotic, etc.
Insanity implies mental disease	Sanity consistent with mental disease of mild degree or of special type
Sanity : Insanity = 1 : 0	Mental disease of *all* degrees, of many kinds

I have recently, for the purpose of discussion with specialistic colleagues, gone over the textbooks and the main classifications used in institutions for the insane and the psychopathic, confining my attention to American views.[11] I find an extraordinary unanimity on the part of these colleagues on the subject-matter of psychiatry. Those of the general practitioners who occasionally dip into the specialistic literature of mental and nervous disease strike into an atmosphere of what must seem the most lively controversy. But in point of fact the battles are greatly localized—I mean the actual battles concerning facts. There is a good deal of nomenclatural difference still preserved in sundry textbooks. I have been trying to put some order into this matter and offer in Table 2 a list of the major groups of mental disease which I think will be found approved by the vast majority of specialists.[12] In fact, I do not know a single specialist who would not agree that in some sense each of the subjoined groups exists. To be sure, some specialists might want to split the groups up further, but of the existence of this mass of medical data there is really no doubt.

TABLE 2.—MENTAL DISEASE GROUPS (ORDERS)

1. Syphilitic	*Syphilopsychoses*
2. Feebleminded	Hypophrenoses
3. Epileptic	Epileptoses
4. Alcoholic, drug, poison	Pharmacopsychoses
5. Focal brain ("organic," arteriosclerotic)	Encephalopsychoses
6. Bodily disease ("symptomatic")	Somatopsychoses
7. Senescent, senile	Geriopsychoses
8. Dementia praecox, paraphrenic	Schizophrenoses
9. Manic-depressive, cyclothymic	Cyclothymoses
10. Hysteric, psychasthenic, neurasthenic	Psychoneuroses
11. Psychopathic, paranoiac, et al	Psychopathoses

I put into the left-hand column the everyday terms for these groups and in the right-hand column a revised and Hellenized nomenclature which I believe has some worth. Concerning this Hellenized nomenclature, I wish to say that in practice I would no more speak of the hypophrenoses in a school for the feebleminded than I would of the *Leguminosae* for dinner or the *Rosaceae* for a nosegay. The advantage of the Grecian nomenclature is quite another, namely, the possibility of exact definition, which the everyday terms do not admit, particularly as some of them deal with disease entities (as dementia praecox) rather than with disease entity *groups*.

The practical contacts of the Boston Psychopathic Hospital with the Massachusetts profession lead me to the idea that the "range of ignorance" of psychiatry by the general profession can safely be localized.

Let us dismiss the eleventh or psychopathic group of the foregoing list, namely, a group I am sometimes tempted to call the "ragbag" group of mental diseases, since the psychopathias, monomanias, psychopathic personalities, etc., which, with varying nomenclature, are dropped into this group, are the regions of densest ignorance on the part not only of general practitioners, but also on the part of psychiatrists themselves.

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[10] Southard, E. E.: Alienists and Psychiatrists: Notes on Divisions and Nomenclature of Mental Hygiene, Ment. Hyg., 1917, **1**, 567.

[11] Southard, E. E.: Recent American Classifications of Mental Diseases (to be published in Tr. Am. Med. Psychol. Assn., 1918).

[12] Southard, E. E.: A Key to the Practical Grouping of Mental Diseases, Jour. Nerv. and Ment. Dis., 1918, **47**, 1.

Limiting consideration, then, to the ten other and better defined groups, I note that the first seven are groups whose general features are well enough understood by the general practitioner, so that, barring mistakes in diagnosis and delays in handling, there is a minimum of gross error on the part of the general practitioner.

The general practitioner may not agree, nor will perhaps all of the older psychiatric specialists agree, that virtually every, if not every,[13] case of mental disease requires consideration as possibly syphilitic (I). Nevertheless all practitioners concede that there is a syphilitic group of mental disorders, some of which require intensive treatment.

Again, with respect to the hypophrenias,[14] most physicians are aware of the increasing part played by the diagnosis of feeblemindedness (II) in modern work touching general practice with special reference to the schools and juvenile courts. Though they may be in doubt concerning the exact value and scope of mental tests, nevertheless the general rubric of feeblemindedness has become familiar. So much emphasis has been laid on the higher grades of so-called feeblemindedness, namely, on the "stupids" or subnormals whom it seems invidious to term "feebleminded," that I have had no hesitation in proposing the term "hypophrenic" to cover all forms of feeblemindedness, not merely the feebleminded proper of English and Canadian usage, but also the imbeciles and idiots below the feebleminded proper and the "stupids" or subnormals above the feebleminded proper.

The epileptic group (III) and the group of mental diseases due to alcohol, drugs and poisons (IV), are reasonably familiar to the general practitioner; and although a good many bad mistakes may be committed in these groups, yet the percentage of errors committed by psychiatric specialists themselves in the same groups is so high that we should not weep about general practitioners' motes from our own specialistic eyes containing large beams.

The fifth group in the foregoing classification, namely, that of mental disease due to focal brain disorder (V), is another group sufficiently familiar to the general practitioner, as also to the neurologist whose special field it touches, and the common categories of mental symptoms found therein are likewise familiar. The general practitioner sees enough cases of arteriosclerotic brain disease, of meningitis, of brain tumor and the like, to be familiar with the not very special mental effects that these brain disorders evoke.

Again, in his everyday capacity as a diagnostician, the general practitioner gets a certain familiarity with the sixth or internist's group of mental disorders—the so-called symptomatic psychoses based on definite somatic disorder (VI), such as a typhoid fever, a pneumonia, a puerperal exhaustion, a cardiorenal disease, a dysthyroidism or even a pellagra. The symptoms here also are such as are familiar to the general practitioner and run on the same lines as the symptoms of disease in general.

The seventh, the senile and presenile group (VII), is again a group in which the symptoms are for the most part such as are easy to understand in the quantitative terms of everyday life.

But, with the enumeration of these seven groups, we have come to the conclusion of the list of diseases in which the symptoms are, as one might say, familiar and wellnigh quasinormal, following lines which the physician can readily understand by comparison with the phenomena of his own life. For in the three remaining groups, the schizophrenic (VIII), cyclothymic (IX) and psychoneurotic (X) groups, there are phenomena of such supernormal or subnormal degree or of such an abnormal and dissociative nature that a considerable specialistic study is required to unravel them. I find that many practitioners, even in haughty old Massachusetts, figuratively throw up their hands when asked to define dementia praecox (here termed schizophrenic) or manic-depressive (here termed cyclothymic) psychosis.

As for the psychoneuroses, the attitude of some practitioners, though I hope not too many, is that the symptoms in this group are "imaginary" and by consequence in some sense nonexistent. The attitude of many general practitioners to the psychoneuroses is like the attitude of the Christian scientists to disease in general: the psychoneuroses are regarded as a form, not perhaps of "mortal error," but of nonexistent disease which the patient is to be got rid of by a process akin to exorcism. This erroneous opinion[15] depends on a confusion between the method of psychotherapy and the nature of the etiologic or genetic features of the psychoneuroses. Because by faith mountains are moved, one has no license to consider that faith established the mountains in the first place.

Accordingly, the difficulties of the general practitioner in confronting the schizophrenics and cyclothymics on the one hand, and the psychoneurotics on the other, are of different sorts. The practitioner of some years' standing has simply had no opportunity to study intensively in the medical school or in postgraduate work enough schizophrenics and cyclothymics to permit his understanding their nature. As for the psychoneurotics (whether in the form of hysterics, neurasthenics or psychasthenics), the general practitioner is sufficiently familiar with their general nature, having enough of them and to spare in his consulting rooms. Nevertheless, his ideas concerning them are apt, I think, to be somewhat vague, or at least vague enough to permit his calling many a case of schizophrenia or of cyclothymia erroneously a case of psychoneurosis. Hence I think are brought about a number of false prognoses and a number of poor prescriptions for sanatorium treatment, treatment by change of environment, or special treatment at home, when some other of these treatments than the one chosen would have been far better for the patient.

It is for no academic reason, therefore, that I ask the general practitioner to bring himself up level with the times in the matter of schizophrenia and cyclothymia. I feel that if he gets an adequate notion of schizophrenia and cyclothymia, his already reasonably correct notions of the psychoneuroses will get their proper balance and perspective alongside the other psychoses. I found one really eminent practitioner denouncing the word "schizophrenia" because he had been practicing for decades and ought really to have known what schizophrenia meant if there really was any such symptom or condition. On inquiry, however, I found that the eminence of this practitioner, which was very genuine, had been attained in ways which excluded him from any knowledge of the peculiar symptom or condition known as schizophrenia. And what holds for dementia praecox holds also for manic-depressive psychosis. The week's excursion to some psychopathic hospital or psychiatric clinic, above suggested, ought to lay hold especially on the concepts of schizophrenia and cyclothymia; and the attainment of elementary knowledge concerning these two groups will bring the level of the general practitioner's knowledge concerning mental diseases up to the level of his general knowledge concerning the diseases of other specialties. In particular, his practice with the early cases, cases which he sees often earlier than does the psychopathic hospital or the psychiatric clinic, will be tremendously benefited thereby, and his efforts at psychotherapy will not be measurably wasted on schizophrenics and cyclothymics, but will be concentrated on the genuine psychoneurotics.

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[13] Southard, E. E., and Solomon, H. C.: Neurosyphilis: Modern Systematic Diagnosis and Treatment, Presented in One Hundred and Thirty-Seven Case Histories, Boston, W. M. Leonard, 1917.

[14] For this term see remarks by the writer in Tr. Am. Assn. for the Study of the Feebleminded, 1918.

[15] Southard, E. E.: *Shell Shock and After*, Boston Med. and Surg. Jour., 1918, 1-19, especially pp. 76 and 77.

If one thinks that this program for bringing up the level of the general practitioner's knowledge in mental disease to his general level in other specialties is too dogmatic and concrete a program, I have only to say that it is at all events a program, and that measures of some sort are stringently necessary in the interest of the mental hygiene of the community.

I trust that in the foregoing paragraphs I have successfully conveyed the impression that these counsels have nothing to do with nomenclature and terminology, but only with the groups themselves under whatever name they might go. I recently gave a talk on shell shock with some literary examples of the neuroses in the group, and was assured afterward by a practitioner that he was now certain of what he had long suspected, namely, that there was no such thing as shell shock. I found that (*a*) his idea that there was no such thing as shell shock reduced to the idea that had been for some decades in his mind that (*b*) neuroses do not exist because (*c*) their symptoms were "imaginary" and that (*d*) to be imaginary meant for this man to be nonexistent. Now *is or is not this distinction between the imaginary and the nonexistent too fine a distinction to implant in the medical student's mind?* Just as the laity is unable to distinguish successfully between "hereditary" and "congenital," so I find many a medical man unable to distinguish between "imaginary" and "nonexistent." If the neuroses have no structural sign postmortem, are the neuroses nonexistent? But peace to the soul of the general practitioner who listened to my shell shock talk! Calmly identifying "imaginary" with "nonexistent," he probably is a very good psychotherapeutist among his parochial flock.

I have adverted above to one little matter of nomenclature, insisting on the virtues of the term "hypophrenic" as including the entire swelling group of the so-called feebleminded. The human advantages of using the term "hypophrenic" pale into insignificance beside the advantages of using some other term for the so-called dementia praecox group than the term borrowed by Kraepelin to designate a group of diseases which he had synthesized from the literature. Some day I wish to write a paper called "Nondementia, Nonpraecox."

If I tell a layman that so-and-so is suffering from shell shock, the layman is aware that the term "shell shock" *connotes* a great deal about the war and its effects, but quickly observes that the term *denotes* little or nothing, and he is forthwith thrown back on the expert for information as to what shell shock really means and what its prognosis may be. Not so when the ardent social worker learns that so-and-so is a victim of dementia praecox. Is she not almost entitled to think that a victim of dementia is demented or else is going to become demented? Are there not similar significances attached to the term "praecox"?

I believe that a great deal of harm has come to patients from the use of the term "dementia praecox," and most psychiatric specialists whom I have consulted on the point cordially agree with me. On this account I have felt that the proposal of the Swiss psychiatrist Bleuler[16] to use the term "schizophrenia" for cases subject to the peculiar dissociation found in these cases is a good one. The fact that it has a peculiar sound, novel to medical ears of the last generation, is no good reason for denouncing the term "schizophrenia," since the symptoms of the disease are at least as peculiar as the name, and there is a good deal of novelty about the whole conception to many general practitioners and consulting internists.

I will not here argue in detail for the use of the term "cyclothymia" instead of manic-depressive psychosis, although I think the tendency of usage and certain logical points may be advanced in favor of cyclothymia, a term which includes in its prototheme the idea of periodicity, always potential in this disease, and in its deuterotheme the idea of affective or emotional disorder, a constant feature of the disease.

I give below the subforms of these eleven great groups of mental disease.[17] These subforms are a product of some American textbooks and specimens of classification now most in vogue. I think this listing, for which I do not wish here to argue in detail, certainly shows that psychiatry is on a pretty stable basis so far as classification is concerned—possibly as stable as many other growing specialties.

Two points are to be made concerning this subjoined list. The diagnosis of these entities (or generic groups) under the greater groups (or orders) is not to be expected of the general practitioner, nor even of the psychiatric specialist on cursory or brief examination. Indeed, I hold that much harm has been wrought by an offhand diagnosis of "general paresis" when all any one could really say, with laboratory tests also in hand, was that the patient had "neurosyphilis." Many errors of this sort, both by general practitioners and by psychiatrists (including ourselves), are given in detail in the monograph published by Solomon and myself[13] in 1917 on neurosyphilis. No, it is much better for the peace of mind of practitioner and patient that the practitioner shall stop short with his *group* diagnosis and let the *entitative* (generic) diagnosis wait on the psychiatric specialists (one of the soundest of whom is Father Time). It is not for the purposes of "brilliant," that is to say, premature and at all events merely lucky, diagnoses that I subjoin the genera which American psychiatry seems, by its textbooks, to afford.

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[16] Bleuler: Schizophrenie, in Aschaffenburg's Handbuch der Psychiatrie, 1911.

[17] For more particulars, see *Southard, E. E.*: The Genera in *Certain* Great Groups of Mental Diseases, to be published in *Tr. Am. Neurol. Assn.*

The second point deals not with the objects of diagnosis so much as with the process of diagnosis. I have placed the great groups with Roman numerals (I, Syphilopsychoses; II, Hypophrenoses, etc.) in a certain sequence which I take to be the practical sequence of successive exclusion and elimination that is of the most value in the present phase of psychiatric theory. No one need use this sequence if one prefers another, and the sequence will inevitably change in the course of time when new facts and new tests are granted to us. And not only the sequence but also the list itself will inevitably alter. Not only have I placed the greater groups or orders of mental disease in a particular practical sequence, but I have endeavored also to place the smaller groups or "genera" of mental disease in a practical diagnostic sequence under each greater group. Again, any one who chooses to use the items as a *list* and not as a *sequence* is entitled to do so: I would claim only that *some* sequence is of practical value in diagnosis, at least for tyros.

TABULATED SUGGESTIONS FOR GENERIC CLASSIFICATION OF MENTAL DISEASE GROUPS

I. SYPHILOPSYCHOSES (the syphilitic mental diseases):
Genera:
General paresis
Juvenile paresis
Nonparetic forms:
Meningitic
Vascular
Gummatous
Less common genera:
Syphilitic feeblemindedness
Syphilitic epilepsy
Tabetic psychosis[18]
Syphilitic paranoia
Atypical

II. HYPOPHRENOSES (the feeblemindednesses, including graded forms of idocy, imbecility, moronity (in the English nomenclature feeblemindedness proper) and subnormals):
[Syphilitic[19]]
Encephalopathic:
Microcephaly, hydrocephalus, focal brain disorder
Glandular:
Cretinism, infantilism, dysadenoidism, mongolism (?)
Hereditary:
Feeblemindedness, amaurotic family idiocy
Atypical

III. EPILEPTOSES (the epileptic group):
[Syphilitic[20]]
[Feeblemindedness with epilepsy[21]]
Alcoholic
Traumatic
Encephalopathic
Jacksonian
Symptomatic
Idiopathic
Equivalent
Narcoleptic
Borderland

IV. PHARMACOPSYCHOSES (the group of mental diseases due to alcohol, drugs and poisons):
[Epileptic[22]]
Alcoholic:
A. Pseudonormal:
Drunkenness, pathologic intoxication, dipsomania
B. Peripheral—Central[23]
Delirium tremens, hallucinosis, Korsakow's disease, pseudoparesis
C. Central
Jealousy-psychosis, paranoia (?), dementia
Drug:
Morphin, cocain, alkaloid
Poison:
Lead, gas, mercuric chlorid, special

V. ENCEPHALOPSYCHOSES (focal brain lesion group of mental diseases):
[Syphilis[24]]
[Feeblemindedness[24]]
[Epilepsy[24]]
[Alcohol, gas[24]]
Traumatic. Note that the traumatic *neuroses*, although they form a group of mental diseases, belong not here in Group V, but below in Group X, the psychoneuroses.
Infectious. The infectious group of encephalopsychoses here listed refers to cases like brain abscess and meningitis in which the organism has produced local destructive effects in the brain.
Neoplastic
Vascular. Under this group would fall the great group of arteriosclerotic dementias which, be it noted, are parted out from the old age psychoses, Group VIII, below.
Degenerative

VI. SOMATOPSYCHOSES[25] (the so-called symptomatic group of mental diseases):
[Glandular feeblemindedness]
[Symptomatic epilepsy]
Infectious, e. g., typhoid
Exhaustive, e. g., puerperal
Metabolic, e. g., cardiorenal
Glandular, e. g., thyrotoxic
Pellagrous

VII. GERIOPSYCHOSES[26] (the presenile-senile group of mental diseases):
[Epilepsy]
[Vascular]
[Alzheimer's]
[Progeria]
[Late catatonia]
[Involution melancholia]
Presenile psychosis
Senile dementia
Presbyophrenia
Senile psychoses

VIII. SCHIZOPHRENOSES (the dementia praecox group):
Hebephrenia
Catatonia
Paranoid
Cyclothymoid[27]
Schizophasia
Dementia praecocissima
Dementia simplex
Paraphrenia

IX. CYCLOTHYMOSES (the manic-depressive and cyclothymic group of mental diseases):
Cyclothymic constitution
Manic-depressive[28]
Melancholia
Mania
Mixed[28]
Involution-melancholia

X. PSYCHONEUROSES:
Hysteria
Neurasthenia
Psychasthenia

XI. PSYCHOPATHOSES (the psychopathic group of mental diseases):
Prison psychosis
Folie à deux
Litigation psychosis
Paranoia
Sense deprivation psychosis
Monomania
Psychopathia sexualis
Psychopathic personality

SUMMARY

The psychiatrist is a specialist in a very complicated field with numerous great groups of diseases for his diagnostic consideration. Each of these great groups is likely to be as complicated within itself as, for example, the group of Bright's disease or the exanthems. The psychiatrist is logically opposed to the alienist. The latter has the function of the public and medicolegal adviser, whereas the psychiatrist is a practitioner whose aim is not merely diagnostic with respect to commitment; his aim is diagnostic with respect to a great number of therapeutic possibilities.

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[18] Of course this is sharply to be distinguished from ordinary tabes dorsalis and nervous disease, and from so-called taboparesis, which by the best nomenclature is a subform of general paresis.

[19] Syphilitic feeblemindedness has been classified under the syphilopsychoses, Group I.

[20] These have been classified under the [illegible] I.

[21] These have been classified under the [illegible] II.

[22] These have been classified under the [illegible]

[23] The nomenclature of these subgenera must remain dubious. I think most workers among the alcoholic psychoses would recognize the value of dividing them in some such triple way as above. The general practitioner has not yet at all clearly in mind, I think, the distinction now drawn by specialists between drunkenness and pathologic intoxication and between delirium tremens and alcoholic hallucinosis. Perhaps it would be well enough to leave these distinctions to the specialists were it not for the fact that so many medicolegal points hinge on the practical decision in cases that fall into the hands of the police.

[24] These have been classified, respectively, under syphilopsychoses, Group I; hypophrenoses, Group II; epileptoses, Group III, and pharmacopsychoses, Group IV.

[25] The term "somatic" is here used following a frequent neurologic plan which employs the term "soma" for the body at large, as against the "encephalon" or brain.

[26] This term is adopted provisionally as against the possible term "presbyopsychoses" because of Nascher's choice of the term "geriatrics" for his proposed branch of medicine, dealing with the diseases of old age.

[27] This genus, if it be such, is devised to include a practically very important group of cases in which the schizophrenic process is precipitated by phenomena that resemble manic-depressive psychosis, or in which there is a definitely cyclothymic course in itself suggesting the true cyclothymoses.

[28] These two forms are designed to include, respectively, cases in which phases of pure mania of depression follow one another, and the cases in which depression and maniacal phenomena are commingled within the single phase.

The general practitioner must now advance to at least as much responsibility in psychiatry as he has in pediatrics, gynecology or dermatology. The general practitioner, if he is to remain of value, ought to know more about all the specialties than each specialist would be apt to know about all other specialties than his own.

Recent reviews of the ideas of psychiatric specialists show a great deal of unanimity as to the major groups of mental diseases. This genuine unanimity is obscured by nomenclatural divergence. At the risk of increasing the nomenclatural divergence, I have been of late proposing a pragmatic key to the group of mental diseases, dividing up the groups according to general and special therapeutic possibilities. I have accordingly no etiologic or somatosystematic suggestions to offer. My classification is purely practical and has no relation either to obvious clinical units from the standpoint of observation or to anatomic resemblances. For example, I would contend that a grouping of mental depressions as sometimes syphilitic, sometimes cyclothymic, sometimes symptomatic, etc., gives the practitioner no orderly means of making his decision in a brief space of time. Such a classification on the ground of clinical resemblances is, in office practice, next to useless, whereas the bigger decision as to whether the patient probably belongs in one of the eleven groups as herein presented is practically much more valuable. Then if the quest can be localized to two or three of the eleven groups, the patient's fate will be greatly benefited.

Again, I feel that the classification of certain diseases as organic dementias hurts the outcome for the patient by delaying decision. The practitioner is rather apt to feel satisfied with thinking that a case is somehow organic, whereas it may be his immediate duty to settle once for all whether the patient is syphilitic, and then to proceed to the more careful differentiation of the possibilities in the focal brain lesion group. But my attitude in general with respect to the general practitioner's duties in diagnosis is that in the first place it is his duty to determine whether the case belongs in the mental group and then to proceed to answer as many questions as available ordinary clinical tests can answer with respect to the place of the patient in some one of these major groups. It is certainly a waste of time for the general practitioner to approach the neurologic specialist with an at all complicated or longstanding case in which the serum test for syphilis has not been performed. With the multiplication of opportunities for mental tests, it is also a waste of time for the general practitioner not to have submitted his case to such tests before bringing the patient to the specialist. I do not mean that the general practitioner should himself perform these tests but that he should utilize some local psychologist competent to perform them.

And so through the list, if the general practitioner knows the main features that distinguish these greater groups of mental diseases from one another, he will be able to utilize the specialist to much greater advantage. The specialist who should fear that his practice would be diminished by such a process on the part of the general practitioner would be so foolish that I suspect he could not be an effective specialist; for if the general practitioner could grasp the main features that distinguish these eleven greater groups of mental diseases from one another, he would carry to the specialist scores and hundreds of cases more than he now carries. For under these circumstances, the general practitioner would know how to couch a great many more questions.

Meantime I find from my Boston Psychopathic Hospital practice that the general practitioners are pretty well grounded in the first seven of the major groups of diseases listed. The general practitioner also has certain ideas concerning the psychoneuroses, but is rather apt to make somewhat obvious errors in the field of the schizophrenias (dementia praecox) and the cyclothymias (manic-depressive group). Sundry patients suffer therapeutically on account of delayed diagnosis in the two latter groups and especially from an erroneous identification of them as belonging to the group of the psychoneuroses.

As for the psychopathias in general, the general practitioner need not rush in where the psychiatric specialists fear to tread.

CONCLUSIONS

1. The advance of the mental hygiene movement throws more responsibilities in psychiatric diagnosis on the general practitioner.

2. The general practitioner should bring his specialistic knowledge of psychiatry up level with his specialistic knowledge, in ophthalmology and dermatology, for example.

3. Alienists are to be distinguished from psychiatrists, and forensic psychiatry ("alienistics") from practical psychiatry, in certain ways (Table 1).

4. There is at present great unanimity on the part of American specialists in mental disease, as indicated by the adoption of common statistical forms (American Medico-Psychological Association).

5. For arriving at a diagnosis of mental disease, I suggest an arbitrary order of exclusion by eleven great groups, into which I have thrown the accepted entities.

6. Nomenclatural divergences are much more frequent than divergences on facts.

7. The use of Bleuler's term "schizophrenia" for dementia praecox and of the term (in cognate use) "cyclothymia" for manic-depressive psychosis is advocated in the line of exactitude and the ready formation of adjectives and relative terms.

8. The use of a new term "hypophrenia" for the various feeblemindednesses is advocated.

9. The ending "osis" is in general advocated for the larger groups of mental diseases, parallel with the use of "aceae" and "osae" for botanical orders.

10. A tentative list of "genera" under these orders is given in the text.

Baking Bread with Waste Heat.—The city council of Reykjavik, Iceland, has begun the experiment of baking bread in a special bakery which utilizes the waste heat from the local gas works. The result has been excellent and in a short time, according to a report of Consul B. L. Agerton at Copenhagen, *Commerce Reports*, Sept. 17, 1918, all the black bread which may be needed will be baked in the new bakery. This is thought to be the first experiment in bread baking by waste heat.

CEREBRAL EDEMA FROM PRESSURE *

W. A. JONES, M.D.
MINNEAPOLIS

The title of this paper may not be entirely in keeping with the contents, but it is intended to open the subject of localized cerebral edema from various causes, particularly from pressure conditions, and also to bring out similar cases, recorded or observed by members of this section, in which focal symptoms suggest a more extensive lesion of the brain which, if operated on, shows that a simple edematous state presents itself, after which the symptoms subside, leaving the diagnosis either a speculative one or one which may be properly termed a localized cerebral edema.

General cerebral edema is undoubtedly a frequent accompaniment of many of the somatic disorders. The most common, probably, is a chronic nephritis or the triad of heart, kidneys and blood vessels. These diseases of the circulatory and eliminatory systems are very commonly associated with stupor, convulsions and neuroretinal lesions and papilledemas. When such a combination of symptoms occurs, it is reasonably fair to assume that the mobility of the cerebrospinal fluid has been altered perhaps on account of a change in the circulatory system within the cranial box. When one considers the relation of the arachnoid and the pia to the fluid contents of the skull, it is easy to hypothecate a probable edema of the membranes or of the cortex itself. Then, too, we have learned that tension of the occupied spaces in the head, either from tumors or thickenings, not infrequently tend to crowd the brain into the foramen magnum; and this in itself is quite explanatory of an edematous state, either peripheral or central.

The delicate tissue strands, which bind the pia and the arachnoid together with the perivascular spaces through which the fluids of the brain circulate, may easily become altered, because it is known that the cerebrospinal fluid, although it is partly protective and offers itself as a water bed to the brain, is intimately connected with the venous circulation through small rudimentary sinuses. Moreover, the cranial nerves themselves, notably the first and second, surrounded as they are by perivascular spaces and delicate tissues, offer a convenient outlet for some of the cerebral fluid contents, although most of the fluids escape into the sinuses, whether large or small. One can readily imagine that a general or local infection of any kind which blocks the venous channels may easily lead to an edematous local condition, such as occurs in thrombosis of the longitudinal sinuses or in a congenitally and badly constructed drainage system in the brain, whereby an old hydrocephalus is either lighted up or is followed by a local or a general cerebral edema.

THEORIES OF EDEMA OF THE BRAIN

E. M. Baehr[1] discusses edema of the brain from a general, as well as a local symptom group, and advances with others the theory that coma, from whatever toxic agent, presents its symptoms through cerebral edema, local or general.

Tauber's theory adds to this a probable acidosis, and incidentally states that these edematous cerebral conditions are not relieved for any length of time by injections of alkalines, as this method is usually a failure on account of the blockade of the cerebral blood stream. Then, too, we have the kidney theory in which the theorist believes that a toxin has developed, but where, when, or how no one knows, although Baehr advances the idea that some toxin developing from the kidney condition may be responsible for a cerebral edema. Baehr asserts, further, that there are four groups of symptoms that occur and are diagnostic of cerebral edema: first, an altered mental state in which the patient varies from a noisy state to one of moroseness; second, a state in which convulsions develop, sometimes accompanied by paralysis, but this is usually temporary. The third group consists of those which come under the heading of comas, and the fourth group in which there is impairment of the functions of the medulla, a poor mechanical condition, accompanied by dyspnea, disorders of the heart rhythm and occasional vomiting and diarrhea.

Mills, in his book, "The Nervous System and Its Diseases," devotes a short section to edema of the brain, and says that in former years it was customary to discuss edema as a separate disease, but that in recent years the tendency has been to consider it only in connection with those systemic diseases and focal disturbances of which it is a feature. Preston, from whom Mills quotes, concludes that among other things edema should receive recognition both from a clinical and a pathologic standpoint; that, although it follows the laws of edema elsewhere in the body, it is considerably modified by the anatomic lymph spaces of the brain and its membranes; that the effused serum may exert mechanical pressure and offer occasion for toxic influences; and that it would be a more common and serious affection, were it not for the free communication which exists between the various lymph spaces as shown by the decided symptoms produced when these cavities are isolated by inflammatory adhesions. Mills mentions, also, that edema of the brain may be partial or general, acute or chronic, and that when it is locally present it is usually due to a local inflammation or pressure from a focal lesion, such as a tumor or an aneurysm. Now that infections have occupied a very large place in our diagnostic outlook, it is even more probable that localized edemas may occur and be followed by a fairly well defined chain of symptoms which resemble in type the symptoms due to the pressure of diseased areas or growths of various kinds. Then, too, in studying the question of fractures, injuries to the head, we find that the penetration wounds, which occur sometimes in such minute forms as to escape detection, may in turn produce a local edema followed by an infection and a breaking down of the membranes of the cortex itself. Under such causative states, edema is probably a secondary condition, but not infrequently an edema may occur without these provocations, but be due to some obstacle in the network of the cerebral veins.

In his book, "The Surgery of the Skull and Brain," L. Bathe Rawling refers to edema following injuries associated with the vasomotor depression and accompanied by engorgement of the superficial cerebral veins with an increase of the cerebrospinal fluid and edema both of the pia-arachnoid region and of the brain itself. Even under concussion, localized edemas may arise, due, probably, to the same obstructive or destructive conditions which occur in the veins or perivascular channels. In referring to traumatic neurasthenia, Rawling further defines edematous conditions of the pia-arachnoid and of the cortex,

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* Read before the Section on Nervous and Mental Diseases at the Sixty-Ninth Annual Session of the American Medical Association, Chicago, June, 1918.

[1] Baehr, E. M.: Lancet-Clinic, 1914, **111**, 696-701.

and in exploratory operations he is particularly impressed by the fact that in a large proportion of cases one finds what appears to be a condition of local edema, some fluid beneath the dura mater, and a greater excess of the same in the pia-arachnoid meshwork, and he says that Leonard Hill's experiments show that edema is dependent on chronic vascular changes, arterial anemia, venous congestion, and cerebrospinal and serous accumulation. Not infrequently an epilepsy has for its focal origin an edema of the membranes and, occasionally, of the cortex. In some of these cases the patients are relieved or cured by a decompression operation. Just so are cases of acute maniacal disorders, and those which follow an accident within a few hours or a few days. The acute cerebral edema is not infrequently present and due to a severe grade of vasomotor depression; it is occasionally, although not always, preceded by a cerebral injury. Some of the patients who have been operated on for supposed cortical or subcortical growths show, on removal of the bone and resection of the dura, that cloudiness only is present. The condition of such patients may clear up immediately after the operation, with a clinical or actual recovery, due to the relief of conditions which have produced pressure and temporary or transient edema.

REPORT OF CASES

Case 1.—W. L. was admitted to hospital Jan. 5, 1917, with a negative family history. His father, a vigorous Scotchman, is still living. There had been no deaths in the family except that of his mother, who died in early life of pneumonia. There is no history of nervous or mental disorder. He had had some of the diseases of childhood, but never was seriously ill. He denied any venereal contagion, and none was evident by examination. Although a man, aged 30, he had been singularly quiet in his habits, rather more so than is necessary for the average growing individual. In fact, most of his social life had been in the neighborhood of the Sunday school, church picnics and things of that order.

The patient, so far as he knew, had been in good health up to Dec. 23, 1916, about two weeks before his admission to the hospital. He was a hard worker in a bank, but somewhat retiring in his disposition, bashful and unwilling to display his activities. He had had neither worry, strain nor disappointment to contend with, nor any physical disease that he could recall.

December 23, he suddenly realized that his left arm and hand felt queer, as he expressed it—a numb sensation, as if the limb had been cold. This occurred during a busy hour, and he paid very little attention to it. The following two or three days, during which Christmas intervened, he went to work, and soon found that his left hand was clumsy, and he had difficulty in executing the finer movements. He went to a physician, who advised massage, but gradually the limb grew worse, and the left leg became involved, until he was obliged to go to bed for a few days. He had no rise of temperature, and no special pains except the numbness and an occasional catch in his limbs, arm and leg, on moving them. He had no headache, no visual disturbance, and he was not exposed, so far as he knew, to cold, nor did he have a sore throat. During the night, while on a train coming to Minneapolis, his arm grew very much worse, and he had frequent contracting movements in his fingers, hand, wrist and forearm. When he arrived he was unable to use the hand, and he found it very difficult even to extend his fingers in any way. He had no trouble with his voice, nor was there any involvement of any of the cranial nerves. He remembered that on two occasions in December, 1916, he had had transient dizzy attacks, but he had attached no importance to them, as they had not inconvenienced him for any length of time.

His weight was 135 pounds, and there had been no change in that so far as he knew. His nutrition and general development were fairly good, but he appeared rather pale and worn. The pulse was 92, and blood pressure 98 systolic and 62 diastolic, and there was no thickening of the arteries, but the heart sounds were distant and rather poor in quality. There were no murmurs or apparent failure in his heart muscle. He had a pharyngeal reflex, and his tongue, although slightly coated, was a little tremulous and, he thought, a bit swollen. There was no trouble with his bladder or rectum. His teeth were in fairly good condition. There was engorgement in both fundi, and the disks showed a marked cupping, but no edema was noted. The right pupil was smaller than the left and irregular in outline. The right pupil was practically stationary, while the left showed slight reaction. The movements of the eyeball were capable in all directions, but there was a slight nystagmoid movement on his looking to either side. His motor power was impaired on the left side, involving the arm and, to a lesser degree, the leg. There was a slight tremor in extending the hands. There was incoordination in the left arm, but coordination was good in the left leg. His gait naturally had a hitch in the left leg, but it was not very marked. There were no contractions and no atrophy. There was no loss of tactile sensibility on the paralyzed side, but there was a loss to vibration sense in both leg and arm, and his astereognostic sense was markedly impaired on the left side. Joint sense and heat and cold sense were normal. Both of the deep reflexes were double plus, and the reflexes of his upper extremities in both sides were present, with a little overactivity in the left biceps and triceps. There was an overactivity of the Achilles tendon in each heel. He had no clonus, and his abdominal and cremasteric reflexes were present. He had a Babinski reflex in the left foot.

On the day following his admission he received a spinal puncture, in which the fluid presented a rather cloudy appearance, but without increase in pressure. The examination of blood and spinal fluid was negative. After the puncture he became very faint. His pulse went down to 48, and it was several moments before he revived. The asynergy of the upper left limb was very marked, and he complained of increased sensation and drawing or contraction of the arm muscles.

During the four days following his admission, there was an increase in his symptoms, particularly in the joint sensation in the left arm, which involved fingers, wrist, elbow and shoulder. In the foot joint, sensibility was retained and was apparently normal, but vibration sense was impaired in both leg and arm on the left side. Incoordination had increased on the left side, particularly and notably in the left arm. During the course of the examination it seemed as if the right arm showed slight impairment in coordination, but it was not worthy of consideration.

January 12, the patient was removed to a surgical hospital and was operated on the following day. Before the operation he complained that his eyes were tired, but he had no hemianopia or increase in his hyperemia or enlargement of the fundi. The operation was done over the right posterior, parietal region, and was a large bone flap operation.

After resection of the dura, a localized edematous spot, involving not only the pia-arachnoid but the outer layers of the cortex of the brain, was found. This pia-arachnoid accumulation was easily removed and the membrane scarified. The cortex itself was scarified lightly over a reddish area. During the operation the edematous condition cleared up and left the brain in what seemed to be a normal color and condition.

After the usual few days of postoperative symptoms the patient improved very steadily and rapidly. His motor power was improved, and his general mental attitude resumed its normal phase. His vision cleared and the pupils reacted to accommodation, but did not change much in their outline and were slightly irregular, and four weeks after the operation he was practically well. There was no hitch in his gait, and the movements in the left leg, which had prevoiusly been restricted, resumed a normal tone. His station was good, and there was no Romberg sign. He complained of a slight feeling in his tongue, and there was a slight tremor at the end of two weeks. His general coordination was apparently normal, and the motor power in his left arm was approximately what it is in all right-handed people; that is, the difference between the two was normal. In his sensation he had a restoration of all touch, pain, joint and vibration sense, which showed a very marked change from the condition at the former examinations. His astereognostic sense was normal. The reflexes of the upper extremity were equal on both sides and approximately in a normal condition. Since his operation in January, 1917, he has been heard from on several occasions. He has resumed his work as assistant cashier in a bank and has used his right and left arms with equal facility. In a recent letter he has expressed himself as feeling perfectly well and very anxious to get into Army service; but, on account of his osteoplastic operation and the condition found there, he was discouraged from entering the service.

Case 2.—H. G., aged 25, admitted to the hospital Jan. 6, 1914, was a salesman, whose family history was from all points negative. He had had measles, mumps and erysipelas when a child. The father gave a history that when the boy was 5 months old he was in a runaway and was knocked senseless, but at that time no evidences of fracture or depression of the skull were found. The patient had begun to drink when he was 12 years of age, and had continued his drinking from that time up to the time he was seen in the hospital. When he had been a young boy he had been very difficult to manage and had shown all sorts of tendencies that were more or less of the defective type. Like many other boys, perhaps, he had been guilty of petty thieving from his home and his father, and sometimes would appropriate a horse or motor and go off for a day. During the time when the boy was not drinking he was extremely likeable and very industrious. He always slept well, and there were no evidences of any disorder of mentality after he had passed the age of puberty. There was some reason to suspect that he had a thick skull, although there could be no diagnostic symptoms of this given. The idea was that he was possibly defective, and an examination of his head, after it was shaved, showed some minor depressions over the parietal and occipital region. He was subjected to a double subtemporal decompression. Three days later he had a convulsion, and within a week he ran away from the hospital, but came back willingly and smilingly. From that time on his recovery was rapid. He came under observation again six months later. He came up to the family's standard physically and mentally, and they said that since the operation he had had no desire for alcohol. He later married, and has been well ever since.

Case 3.—E. P., aged 18 years, had a father and mother living. The only history of any moment obtainable was that the paternal grandfather had epilepsy late in life. This boy was well until he arrived at the age of 14, when in a fall he struck on his head. He had been unconscious for an hour, complained of headaches afterward, and was nervous from that time continuously; but when he was able to avoid excitement he did very well up to within a month of his appearance in Minneapolis on Jan. 19, 1912. Then he began to have attacks of unconsciousness, which occurred with great frequency. During these attacks, or after them, he was evidently laboring under some hallucinations or became frenzied so that he threatened to kill people for minor causes. Before coming to Minneapolis he had spent a month in the State Hospital for the Insane at Rochester, Minn., where he had been observed, but was reported unimproved. His family thought he had an indentation of the skull at a point where he struck in falling, but it was not easy to map out, and when he was operated on later there was no evidence of fracture. During his attacks of unconsciousness he resembled the average epileptiform patient, except that there were no movements or frothing at the mouth. But he always complained of a headache and he was inclined to sleep after the attack. In one of his attacks before he went to the state hospital he had wandered off into the fields and had to be returned to the house and watched. The history further brings out the fact that three months after his accident, which was in 1907, he had had a few of the present type of attacks of unconsciousness.

Without any localizng symptoms in view, without any findings in the eyegrounds and without any evidence of any involvement of other cranial nerves, and purely because of the attacks he had, it was assumed that he had a hard skull and that he probably had some pressure symptoms that might be relieved by an operation. He was in a peculiar state of mind —excited, alert and inclined to irritability. All of his reflexes, both superficial and deep, were extremely active.

Jan. 29, 1912, he was operated on. A scalp flap was raised on top of the head with an anterior attachment, and two trephine openings of an inch in diameter were made on either side of the median line, just behind the frontal parietal suture. The skull was very dense and very thick. The openings made by the trephine were enlarged with a rongeur and revealed a thickened dura, which was opened and turned back. The pia-arachnoid showed a cloudy thickening and resembled a cyst between the membranes, but this prevailed in all parts of the opening. These filled areas and edematous places were scarified thoroughly, and the brain was swabbed with 1/1000 mercuric chlorid solution. The dura was left open and tucked under the scalp for permanent drainage. A thorough exploration of both the inside and outside of the dura for two inches around the opening was made, but nothing was discovered in the way of a tumor or any other disease.

Perhaps two of the interesting points about this case were the clearing of the grayish membranes and the relief of the edema when the skull was opened. We watched this process in each opening, and before the operation was completed both of the areas were free from edema and showed the normal pink surface of the cortex.

This man made a quick recovery and has remained free from either attacks or mental disorder ever since.

CONCLUSIONS

1. There are undoubtedly many cases of local or generalized cerebral edema that are unsuspected.

2. Patients who give a history of an injury, however remote, provided it is localized, may have a local cerebral edema from pressure and from a fracture of the internal table of the skull, or from simple concussion of the brain, or a blow on the head, with or without infection.

3. Occasionally cases exhibiting focal symptoms may be wholly due to a localized edema, and too few cases of epilepsy, acute and violent but with transitory mental excitements, justify an exploration for a suspected edema.

4. There are many cases of hard, thick skulls, obstructing free circulation in the pia-arachnoid and in the cortical veins and perivascular spaces, which may be temporarily or permanently relieved by decompression operations.[2]

ABSTRACT OF DISCUSSION

Dr. Frank P. Norbury, Jacksonville, Ill.: I would like to ask Dr. Jones how he excluded the cardiovascular renal states in the first cases reported. I have a case under observation now, and I think it is wholly a cardiorenal condition. Whether we are justified in opening the skull in a cardiorenal case is a question I would like to have answered.

Dr. Andrew L. Skoog, Kansas City: Referring to the point relative to edema causing the focal type of epilepsy, there still remains a certain number of cases with an epileptic syndrome in which we do not know the etiology. It is possible that the edema of the brain is the cause of this disturbance primarily. On the other hand, in a large number of cases of edema of the brain we do not know the cause. Possibly they are due to some obscure intoxication of the cortex, which causes either focal or generalized edema of the brain. In regard to treatment, I see no objection to doing a decompressive operation in some cases. However, I think we are justified in first trying to relieve these patients by removing cerebrospinal fluid, possibly once, possibly two or three times. I have had several of the cases, in which I believe the results were just as good by resorting to such a simple procedure, as might have been obtained if a decompression operation had been performed.

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[2] Many of the compilations embodied in the first few paragraphs are from Keen's "Surgery" and accredited to Cushing and Bordley, 7, 728.

Dr. Albert E. Sterne, Indianapolis: It depends entirely on what we mean by edema of the brain. We should not use that term unless we mean a cellular encephalitic process, a serous encephalitis. We should distinguish between edema and any form of hydrocephalus. Furthermore, in certain conditions, an encephalitic process frequently arises in the brain no matter what the etiology may be, whether it is traumatism, tumor, infection, exhaustion, sunstroke, or due to a drug or syphilis. Under those conditions the only thing the brain cell can do, primarily, is to swell. This is the preliminary stage of an inflammatory process. Then, if by the term edema of the brain, Dr. Jones means such a process as that, I would subscribe to such a conception. But I do not believe I should consider that edema of the brain arises in a purely local manner. Without doubt there can be intensification of the general swelling in a given territory, but I do not believe it arises in a circumscribed fashion and remains circumscribed.

Dr. Joseph Byrne, New York: I confess to having doubts as to the localization in the first case Dr. Jones reported. There are a few inconsistencies in the sensory manifestations. For instance, motor power and stereognosis were defective in the left hand, but the author did not specify as to these functions in the right hand. I would ask just what the condition was in that respect. If the left hand only was involved, the trouble probably would be in the commissural fibers. The second point is as to the question of vibration. There are two elements in vibration: the affective or thalamic element and the critical or cortical element. These two things should be differentiated sharply. The specific element of heat as such, as well as the element of rapidity in vibration, implies comparison and is to that extent critical or cortical, whereas the pleasant or unpleasant feeling of heat or vibration (affective element) is mediated by the thalamus. The question of edema has not been settled satisfactorily to physiologists. It is the problem of physiologists to-day just as it was many years ago, Dr. Martin Fisher's work to the contrary notwithstanding.

Another question that comes up is the mechanism of cerebral nutrition. I do not want to be overcritical, and it may be merely a play on words, but there are no lymph vessels in the brain tissue or spinal cord. There are perivascular spaces but no lymphatics. Then, another question comes up as to the rôle of a very important structure the function of which has not been defined clearly. The neuroglia is in close anatomic relation with the perivascular spaces on the one hand and with true neural tissue on the other, and hence may play an important rôle in neural nutrition. We are a long way from having a true conception of the mechanisms of cerebral nutrition.

I differ somewhat from Dr. Jones as to diagnosis and localization, although I agree with him as to his method of treatment. Our practical work in cases like this has been most successful. I believe that in all these cases a decompression on one or the other side has great influence in restoring nutrition and function.

Dr. Bayard Holmes, Chicago: I have been interested in the possibility of reducing edema of the brain on account of its occasional appearance as a terminal factor in dementia praecox. When the two cases that were reported by Nissl came out I began to look for some method of reducing the increased intracranial pressure and edema which seemed to be present in those cases, and found that when there was a high intraspinal pressure, which presupposed, perhaps, a high intracranial pressure, it could be reduced by the intravenous injection of large quantities of a concentrated solution of glucose, the concentration being about 33⅓ per cent. or higher. And I wondered whether in such instances as those reported a concentrated solution of glucose might not be useful in reducing edema of the brain, perhaps anticipatory of any surgical interference. In the few instances wherein we used the intravenous injection of a concentrated solution of glucose the intraspinal pressure went down and remained only a short time, not to exceed twenty-four to forty-eight hours, when the intraspinal pressure rose to the high point from which it had come. In most cases we found the pressure to be from 150 to 380 mm. of water, and six hours after injection of the glucose it had fallen, in one case, to 40 and in another to 80 mm.

Dr. William A. Jones, Minneapolis: The discussion has brought out the points I wished to emphasize. I think there is absolute justification in the decompression of many people who have ill-defined conditions in the cortex and meninges, and I believe we will find many localized edemas, from whatever cause. One case of mine might have been a cardiovascular renal case. At all events, the patient had the condition, and the swelling was large enough so that it was circumscribed and scarified, relieving the symptoms, and the man recovered, though he had exhibited all the focal symptoms described. He may have another attack later. The question of epilepsy is very important as to the possibility of some local troubles being responsible for the epileptiform attacks, and those cases may safely be decompressed, and I think many of them would be improved if not relieved entirely. As Dr. Sterne suggests, I believe there is a swelling of the cells which surround a certain definite area in the pia-arachnoid and unquestionably in the localized territory of the cortex, but a swelling here can be relieved just as well by decompression and scarification as it can elsewhere. The astereognostic sense was limited and localized and defined very definitely. It was carefully worked out and found to have absolutely disappeared within two weeks after operation. I think that proves we struck the right point, because an exudative and perhaps inflammatory process was found, though typically edematous in appearance.

ETIOLOGY OF THROMBO-ANGIITIS OBLITERANS (BUERGER) *

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On the basis of extensive clinical observation and a variety of laboratory examinations of patients suffering from the so-called thrombo-angiitis obliterans (Buerger), some points that may prove of interest are presented herein as tentative conclusions. They may have to be revised from time to time as our knowledge of the disease deepens.

Chemical analysis of the blood of these patients has shown that:

1. There is no retention of waste nitrogenous constituents.
2. There is no marked decrease in the alkaline reserve of the blood, as demonstrated by the carbon dioxid combining power of the blood plasma (method of Van Slyke).
3. In all the cases thus far studied, the ingestion of 100 gm. of glucose, after a brief fasting period, has produced hyperglycemia.

This observation shifts the whole question of the etiology of the disease to new ground, and the old designations appear no longer appropriate.

For the present I would propose naming the disease "glycophilia," and shall so call it in the course of this paper. The similarity of the name to "hemophilia" is intended to point to sex limitation and other obscure features of the disease.

GENERAL CHARACTERISTICS OF THE DISEASE

The disease usually develops soon after puberty, rarely after the fiftieth year.

Abuse of tobacco, particularly excessive smoking of cigarets, may occasionally be a contributory etiologic factor, though some patients afflicted with this disease

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* Read before the Section on Surgery, General and Abdominal, at the Sixty-Ninth Annual Session of the American Medical Association, Chicago, June, 1918.

have claimed they are very moderate cigaret smokers. The disease is a chronic one, usually extending over many years. Periods of activity may alternate with periods of quiescence.

TABLE 1.—CHEMICAL ANALYSIS OF THE BLOOD

Case	Age	Red Blood Cells	Platelets	Wassermann	Milligrams, 100 C.c.					Chlorids, per Cent.	CO₂ Comb. Power, Vol. per Cent.	Sugar, per Cent.
					Nonprotein N	Urea N	Uric Acid	Creatinin	Cholesterol			
H. K.* 7855	33	6,120,000	....	Neg.	25	12	1.8	2.0	188	....	47	0.136
M. B.* 9343	42	5,200,000	....	Neg.	30	14	1.0	0.5	188	....	65	0.129
V. M.* 9333	39	5,800,000	....	Neg.	27	12	1.5	0.4	231	0.62	70	0.136
M. S. 29	40	6,170,000	....	Neg.	22	11	1.9	0.4	231	0.57	68	0.138
A. S. 953	47	5,100,000	544,000	Neg.	35	18	3.1	0.8	214	0.62	57	0.102
J. C. 1272	44	5,900,000	720,000	Neg.	25	12	3.1	0.6	185	0.56	61	0.116
W. R. 1600	30	5,500,000	416,000	Neg.	25	12	2.0	1.0	125	0.56	48	0.110
I. K. 1912	43	6,814,000	484,000	Neg.	23	10	1.9	1.0	150	0.62	53	0.106
C. M. 2152	37	7,200,000	524,000	Neg.	25	12	1.3	0.8	188	....	..	0.110
M.	..	5,326,000	544,000	Neg.	25	11	2.9	1.0	214	0.70	57	0.100
H. F.	..	5,100,000	383,000	Neg.	30	14	2.9	1.0	213	0.70	78	0.120
M. G. 3454	33	5,984,000	496,000	Neg.	27	13	1.2	0.8	200	0.60	71	0.116
L. M. 2498	34	5,240,000	416,000	Neg.	25	11	2.5	0.8	188	0.66	67	0.106
I. B. 2468	41	4,584,000	312,000	Neg.	25	11	2.0	0.8	188	0.66	65	0.168
I. A. 3288	40	....	......	Neg.	25	12	1.5	0.5	200	0.56	65	0.10

* Blood cultures negative.

The early symptoms are: pains in the calf of the leg on walking (intermittent claudication); spontaneous, uncontrollable pains in the toes, feet and legs, especially during the night, when in horizontal posture. Later on, the arteries usually become occluded and spontaneous gangrene develops. The upper extremities also may become affected.

GENERAL CHARACTERISTICS OF THE PATIENTS

All the patients we have had have been males; women seem to be immune.[1] They were all Jews of the poor classes who had emigrated from Russia, Poland, Galicia or Roumania—countries whose population is known to be especially subject to disturbances of sugar metabolism. This particular type of poor immigrant Jew has for ages been living under most insanitary conditions, closely confined and forced into intermarriage. They are hereditarily heavily encumbered; amaurotic family idiocy is specific among them; diabetes is a frequent disease; at one clinic it was associated with tuberculosis in 60 per cent. of the cases, against from 6 to 27 per cent. in other countries than those named above, according to general diabetes statistics. In one of my recent cases Irish descent was claimed. Investigation disclosed an Irish mother and a Polish Hebrew father; the son (my patient) had been left in ignorance of his father's descent.

Patients afflicted with a similar trouble are said to have been found also among the Swedes in Wisconsin and Minnesota (Ochsner), among the Japanese (Koga), in Cuba and in Persia, but the identity of the disease found in these countries with that of these Jews has not been proved.

The majority of the patients have a high red blood count and proportionately high count of blood platelets.

In trying to find a donor for blood transfusion in these individuals, three years ago, it was seen by the serologist of our hospital, Dr. A. L. Garbat,[2] that they all belong to a special class.

Almost all the patients seen by us have flatfoot.

INVESTIGATION OF THE DISEASE

On previous occasions I have given expression to my conviction that the disease under discussion would turn out to be a blood disease. I determined to get more light on this question, if possible. Therefore, beginning with February of this year, during my service at the Lenox Hill Hospital (formerly the German Hospital) of New York, I arranged for the admission of a limited number of these patients and had their blood examined in every conceivable direction by Dr. Adolf Bernhard, the pathologic chemist of the hospital, to whom I am greatly indebted for his untiring cooperation (Table 1). After a series of negative results in various directions, we found a disturbance of the sugar metabolism.

The sugar tolerance in glycophilia has been studied in fifteen patients up to the present time. The results thus far obtained are embodied in Table 2.

The concentration of sugar in the blood of fasting normal individuals varies from 0.08 to 0.10 per cent. When 100 gm. of glucose are ingested, the sugar concentration of the normal individual does not rise above 0.15 per cent. at the end of one hour, and by the end of the second hour the concentration of blood sugar has again returned to the normal or to a somewhat lower level. If the concentration of blood sugar one hour after the ingestion of the glucose reaches a higher level than 0.15 per cent., hyperglycemia exists.

This hyperglycemia may be accompanied by glycosuria. In the cases studied, the fasting level of the blood sugar varied between 0.096 and 0.168 per cent.

TABLE 2.—CARBOHYDRATE TOLERANCE TEST

Case	Age	Blood Sugar before Glucose, per Cent.	Blood Sugar 30 Min. to 1 Hr. after 100 Gm. Glucose, per Cent.	Blood Sugar 2 Hrs. after 100 Gm. Glucose, per Cent.	Urine before Glucose	Urine after Glucose
1. M. B. 9343	42	0.129	0.180	.....	Neg.	Neg.
2. V. M. 9333	39	0.136	0.212	.....	Neg.	Neg.
3. M. S. 29	40	0.138	0.248	.....	Neg.	1st hr. trace 2d hr. trace 3d hr. trace
4. A. S. 953	47	0.102	0.198	0.198	Neg.	
5. J. C. 1272	44	0.116	0.180	.....	Neg.	Neg.
6. W. R. 1610	30	0.110	0.189	0.120	Neg.	1st hr. trace 2d hr. trace 3d hr. trace
7. I. K. 1912	43	0.106	0.189	0.159	Neg.	Neg.
8. C. M. 2152	37	0.110	0.212	0.056	Neg.	1st hr. neg. 2d hr. trace
9. M.	..	0.100	0.174	0.100	Neg.	Neg.
10. H. F.	..	0.120	0.153	0.112	Neg.	Neg.
11. M. G. 3454	33	0.116	0.189	0.174	Neg.	Neg.
12. L. M. 2498	34	0.106	0.138	0.215	Neg.	1st hr. neg. 2d hr. trace
13. I. B. 2468	41	0.168	0.192	0.126	Neg.	1st hr. neg. 2d hr. large amt. 3d hr. trace
14. I. A. 3288	40	0.100	0.174	0.138	Neg.	1st hr. trace 2d hr. 1.5% 3d hr. trace
15. S. S. 3696	51	0.096	0.232	0.192	Neg.	1st hr. 0.6% 2d hr. 1.6%

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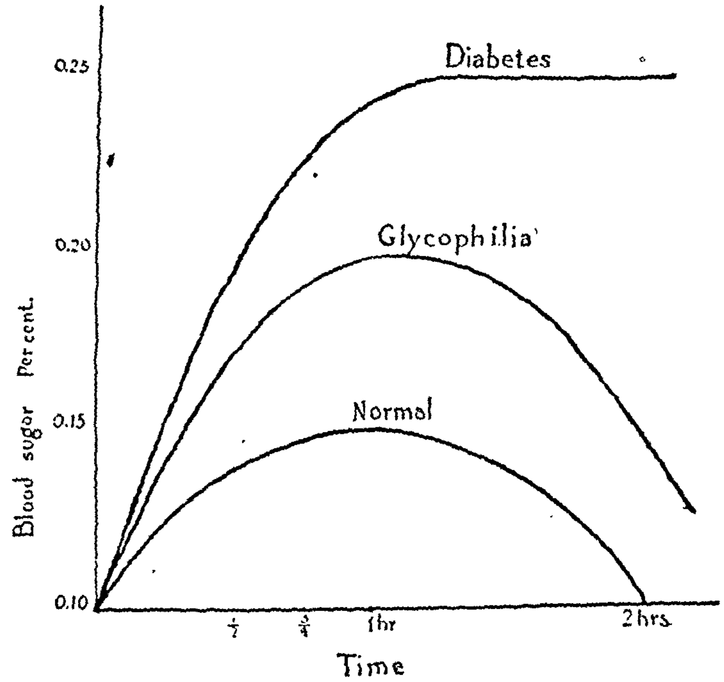
[1] In a recent case hyperglycemia was also found in a Jewess who complained of continuous cold sensations in her feet and showed absence of pulse in both peroneal arteries.

[2] Meyer, Willy: Conservative Treatment of Gangrene of the Extremities, Ann. Surg., 1916, 63, 280.

In seven cases the concentration of blood sugar before the ingestion of glucose was higher than the normal figure, varying between 0.116 and 0.168 per cent. In other words, some of these patients come to us with a certain degree of hyperglycemia, without having taken the glucose.

One hour after the ingestion of 100 gm. of glucose, the blood sugar concentration in these patients varied between 0.138 and 0.248 per cent., whereas in the normal individual, as already stated, it does not rise above 0.15 per cent. Two hours after the ingestion of the glucose, the blood sugar concentration varied between 0.10 and 0.215 per cent.

One case, M., No. 2498, did not show a *marked* increase in blood sugar concentration after the ingestion of glucose, it being 0.138 per cent. one hour later. However, this case showed the highest concentration of blood sugar after two hours, at which time it was 0.215 per cent. It is the only case in our series that shows a higher concentration of blood sugar at the end of the second hour than at the end of the first hour.



Comparative blood sugar curves after ingestion of 100 gm. of glucose.

In six other cases the blood sugar at the end of the two hours did not reach the original level obtained before the ingestion of glucose.

The results of these investigations indicate some disturbance in the carbohydrate metabolism of the patients. The studies are being continued in our hospital, and their progress will be reported from time to time.

The general clinical aspect of these cases in many respects shows such a close similarity to what we are accustomed to see in cases of diabetes mellitus that their classification as "near diabetics" appears justifiable, and I fully expect to find this diagnosis verified after the study of a greater number of cases.

The characteristic difference in the sugar tolerance of healthy individuals, glycophiliacs and diabetics is diagrammatically shown in the curves in the accompanying chart.

The probable cause of hyperglycemia in glycophilia, and also of the erythrocytosis which is frequently found combined with it, I expect to take up soon in another communication.

The chemical blood analyses of Dr. Bernhard appear to justify the above proposed change in the nomenclature of this trouble. "Thrombo-angiitis obliterans"—the name given it by Dr. Leo Buerger of New York—implies a thrombus formation, due to inflammation of the blood vessels. I do not believe, however, that the occluding masses within the small arterial blood vessels are really thrombi, nor do I believe that an inflammatory process of the blood vessel walls plays a rôle from an etiologic point of view.

I am rather inclined to explain these masses as originally being a conglomeration of red blood corpuscles due to erythrocytosis and stasis, the latter being a sequence to the increased viscosity of the blood. They may appear to the eye of the pathologist, macroscopically and microscopically, as thrombi. Yet, I feel that microscopic lenses of higher power than we know at present will probably show them to be something different.

This is also the reason why the name "thrombophilia," which I recently proposed[3] for this disease, has been discarded.

CLINICAL OBSERVATION AND TREATMENT

In my service at the Lenox Hill Hospital five beds were set aside in the early part of this year for the study and treatment of glycophilia. They have been constantly occupied by these patients, and for weeks at a time by the same men. At certain periods it was necessary to increase the number of beds to seven. I feel the need of at least fifty beds for this purpose. But to have set aside more than from five to seven would have crippled the service.

In order to handle with these limited facilities the greatest possible number of individuals, I have endeavored to shorten the time required for their treatment at the hospital. Out of the first empiric steps and the feeling of our way, a sort of routine has gradually developed, as follows:

On the patient's admission to the hospital a complete chemical analysis of his blood is made, also a complete blood count, platelet count and Wassermann test. Then the sugar tolerance test is carried out. According to our present view, a positive result places the patient in the glycophiliac class, and he is retained for treatment.

In order still further to cut down the time required for preliminary examinations and to save several days of hospital attendance, the blood tests and the sugar tolerance tests have of late been made in an ambulatory fashion at the dispensary. The work there has been placed in charge of a special assistant, Dr. M. Greenberger.

A most conspicuous feature in the picture of glycophilia seems to be a considerable dehydration of the tissues. A glycophiliac may be compared to a flower withering for the want of water. Our treatment, therefore, consists in supplying an abundance of water to the system.

From the start, the treatment is intensive. It aims at producing quickly the highest possible degree of hydremia. This is obtained by the simultaneous use of duodenal flushing with the help of Einhorn's duodenal tube, as suggested by McArthur[4] of Chicago, combined with hypodermoclysis. In duodenal flushing, from 8 to 10 quarts of Ringer's solution, or a solution of sodium bicarbonate (from 15 to 30 gm. of the salt per day) of body temperature, are given by the rapid drop method within twenty-four hours. Ringer's solution or a solution of sodium bicarbonate seems to have a better effect than plain water.[5] In duodenal flushing the actual absorption of the water into the system by way of the blood has been proved by the fact that about as much urine is discharged as water is poured into the intestinal tract.

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[3] Report of Surgical Section, New York Academy of Medicine, Med. Rec., New York, 1917, **92**, 262.

[4] McArthur, L. L.: Surg. Clinics, Chicago, 1917, **1**, 499.

More recently we have made the patient buy the tube before he enters the hospital. Here he is taught its use, and as soon as he has learned it, he is sent home to continue the treatment there for from three to five weeks, provided it is a mild case; if he represents a more serious case, he remains at the hospital for additional hypodermoclyses. We are now about to transfer to the dispensary the giving of hypodermoclyses, and we are arranging for three treatments per week for each patient, under special supervision. Of course, only patients who are able to walk can be subjected to such ambulatory treatment.

Hypodermoclyses are given with the maximal quantity of Ringer's solution the patient can endure, and repeated daily, if possible. Intravenous infusion of Ringer's solution is not resorted to, because the aim is the attainment of the greatest possible penetration of fluid into the body tissues. Extensive literature shows the latter to remain quite dry when the liquid is introduced intravenously.

The injection of such quantities of fluid is made principally for the purpose of reducing the viscosity of the blood and thus enable it to pass again through the narrowed arterial channels.

During this treatment the condition of the patient occasionally runs the following course: The incessant, most excruciating pains, not controllable by any other means, decrease in intensity. At first only a few hours of sleep can be enjoyed by the patient while sitting upright, for the night, in a chair. Soon he goes to bed and keeps the affected leg hanging out; then he risks lifting it to a horizontal posture; eventually he rests comfortably in bed, free from pain.

The foregoing refers to patients without local gangrene, either of the superficial or deeper tissues. If gangrenous lesions of the skin and subcutaneous tissues are present, it has been found best, as regards saving time in the treatment, and particularly in alleviating the pain, to touch the ulcerative spot *lightly* with the actual cautery. The sealing of the hypersensitive sore does away with a good deal of pain. Under the scab, often healthy granulations form which tend to more rapid healing. Sometimes the eschar stays on until cicatrization of the formerly obstinate wound is completed. The light, dry gauze dressing is changed as little as possible during the time that the artificial hydremia is being maintained.

In the majority of cases the deeper tissues, particularly periosteum and bone, are affected. Often it will be seen that what at first glance appeared to be a paronychia is a necrotic osteoperiostitis of, say, the third phalanx of the toes or fingers. This may have the tendency to invade the central cavity of the bone, and later involve the interphalangeal joint; or it may be that a seemingly superficial gangrene, for instance, over the os calcis laterally or at the calx itself, runs straight down to the bone. If conservative treatment is at all contemplated in a case like this, it is unwise to treat these wounds with all kinds of dressing, until the demarcation line has formed. Circumcision of the necrotic tissue with a knife, and the use of the actual cautery on the surface of the fresh wound, are better. Although with the latter procedure it will take a long time before the wound heals, the patient's pains are often much lessened.

When it comes to operating—enucleation or amputation—I prefer to undertake the operation after the patient's system has been thoroughly permeated with fluid. It may then be sufficient to enucleate or amputate a toe or a finger, where formerly larger parts of the extremity had to be sacrificed. In other cases, amputation below the knee will give a good result, while without the preceding hydration of the system, amputation above this joint would probably have been required. It almost seems as if this temporary saturation of the system with fluid would enable us to operate more peripherally, with greater and more frequent success, than could be obtained formerly. Further experience is needed definitely to determine this point. Probably the degree of improvement in the circulation and the condition of the blood will differ in different individuals.

Without doubt there are abortive cases of the disease. A most remarkable consequence of the treatment in some cases has been the restoration of pulsation in arteries over which, before the treatment, no pulse could be felt. Koga observed the return of almost normal pulse in ten out of thirteen Japanese cases, after a course of hypodermoclysis. I have seen it in only a few instances. Still, I have seen it, and the mere fact that pulsation does return in previously pulseless major arteries—or, expressed in other words, that occluded arteries become again patent, and within a comparatively short time—makes me look with doubt on the theory that ascribes the occlusion to thrombosis. It rather inclines me to attribute the occlusion to stasis, as far as the arteries are concerned. In the veins the occlusion is probably a true, though secondary, thrombosis.

Patients without gangrene are discharged as soon as their pains have subsided. When this goal is not reached, ligation of the deep femoral vein below Poupart's ligament, or amputation, is performed. In spite of one very good result of arteriovenous anastomosis between the femoral vessels in Scarpa's triangle, in one of my patients, aged 31, I could not make up my mind thus far to have this operation take the place of a regular intermediate step, before amputation is resorted to.

However, be it specially emphasized, none of these patients are cured; they are merely improved, whether or not operation is done. In either event, their trouble returns sooner or later. This, at least, has been the rule so far. Of course, there may be fortunate exceptions. The reason for this fact is that the underlying cause of the disease is as yet unknown, and until it is known, we cannot hope to bring more than temporary relief to these patients. Our treatment, conservative as well as radical, thus far has been only palliative. True, after amputation of the leg, the old tormenting pains subside as by magic; but the disease goes on nevertheless. Frequently the other extremity after a while shares the fate of the one amputated, and still later on, the upper extremities may be attacked. Proof of the continuance of the disease after the discharge of the patients, with their symptoms improved and their wounds healed, is the fact that they are usually unable to do much walking without getting pains and becoming excessively tired.

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[5] In making up Ringer's solution we have employed the tabloids furnished by the firm of Burroughs Wellcome & Co., dissolving two tabloids in 1 pint of water. Each tabloid contains: calcium chlorid, 0.05 gm.; potassium chlorid, 0.05 gm.; sodium chlorid, 2.25 gm.; sodium bicarbonate, 0.025 gm., and glucose, 0.25 gm. One tabloid dissolved in 250 c.c. of water forms Ringer's solution.

We put these discharged patients on a mild antidiabetic diet and advise them to take up work that will not unduly tax the muscles of the respective extremity, although the latter advice is usually difficult to follow for this class of mostly poor patients. They are further instructed to report back for blood examination at varying intervals, according to conditions present.

Much work remains to be done to clear up this fascinating affliction. I am convinced that it is primarily a disease of the blood of endocrine origin—due principally, perhaps, to a disturbance in the normal function of the suprarenals—and not a disease of the blood vessels. Should we succeed in tracing it back to its original cause and then find a way of correcting the disturbance, not only untold suffering would be spared these pitiful patients and their families, but vast sums of money saved to the country at large.

CONCLUSION

Although the number of cases studied is small, the results thus far obtained definitely show that there is something defective in the carbohydrate metabolism of these patients.

Regarding the theory I have advanced above, that one or more glands of internal secretion are pathologically affected and cause the disturbance, I fully realize that it rests as yet on slender support. But I take kindly to this theory, because it tends to remove the disease from the realm of the mysteriously obscure, and brings it into the purview of an already thoroughly explored field of medicine, thus making available for its elucidation a vast treasure of experimentation already laid down in literature. However, even with this help, the task of finding a path through the many contradictory observations and apparent inconsistencies is altogether too big for individual effort, and recognizing this to the full, it seemed to me best to make known at this time what we have found thus far and to urge the cooperation of all those who are called on to treat this class of patients.

The best way to make real progress in this matter would be to get some philanthropist interested in the subject and induce him to equip liberally and endow a commission, composed of specialists from the various fields of medicine involved and having for its sole object the study of glycophilia.

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ABSTRACT OF DISCUSSION

Dr. V. L. Shrager, Chicago: It is very sad that this condition is not better understood, particularly clinically. It does not matter so much that we do not know what the cause is at this time. At Mount Clemens, where I have been a patient myself, many patients were treated for rheumatism when they had only the early stages of thrombo-angiitis obliterans. Flatfoot is frequently associated with angiitis obliterans, which suggests an anatomic theory. Oppenheim and a few others have found that these patients have a congenital smallness of the blood vessels. Many of them, whether treated or not, develop epigastric distress and excruciating pain. I have seen cases of spasm of the epigastric region entirely ignored. The angiospasm is very much the same as a cramp in the calf of the leg. I must say in defense of the Ringer solution that while it does not modify the disease, it is a blessing to the patient. I have never known any of them that did not get absolute relief. I have extended the use of Ringer's solution to trophic diseases of the foot and other diseases. I have treated several cases of diabetic arterial changes, and I have found that Ringer's solution gives them a great deal of relief.

Dr. Willy Meyer, New York: Dr. Buerger has made careful pathologic studies of the type of the blood vessel occlusion. I so far would disagree with him with reference to the interpretation of his findings. Our laboratory examination has shown the hyperglycemia often before the ingestion of glucose, surely soon after. I believe that these patients are "near-diabetics." Such assumption will explain easier also the cases with open blood vessels and gangrene, as in diabetes. From the standpoint of symptomatic treatment we can best improve the condition of these patients by pouring as much fluid into their system as possible, particularly by using the duodenal tube. Nobody can drink 8 to 10 quarts of fluid a day for a number of weeks. That the fluid is actually absorbed and not to greatest extent discharged by the rectum is shown by the large amount of urine voided by these patients. As a matter of course, some fluid is retained in the system.

Regarding surgical treatment, it seems unwise in patients with superficial gangrene to wait for further developments. We should act immediately and touch the gangrenous spot lightly with the cautery; under the eschar the wounds often heal. If we remove the nail in a patient with what appears to be a paronychia, we will often find under the same an osteoperiostitis, not infrequently combined with osteomyelitis, of the third phalanx, which seems to be a reactive inflammation to localized bone gangrene, and if treated properly will greatly relieve the pain. A most interesting observation, which will be valuable if corroborated by further clinical data, is, that if we pour a large amount of liquid into the system of these patients, a required amputation can likely be done more peripherally; in other words, we may with it, for instance, more often be enabled to amputate below the knee rather than above the knee without recurrence of gangrene. If we should be able to find the cause of this disease and correct it, certainly great expense would be saved to the community at large, not to mention the unspeakable suffering of these patients and their families. For the trouble is comparatively frequent, especially in the large centers of our country, and those stricken by the disease always spend months and years in hospitals.

Mortality Among Women from Causes Incidental to Child-Bearing.—Between the ages of 15 and 44 the diseases and conditions incidental to child-bearing account for more deaths of women than does any other disease or class of diseases except tuberculosis. This statement is made by Louis I. Dublin, of the Metropolitan Life Insurance Company, in an article on a study of mortality among women from causes incidental to child-bearing, and it is based on the records of death of a large number of insured women in the industrial department of the Metropolitan company. During the six year period, 1911 to 1916, covered by the study, it is estimated that 14,694,260 insured women between the ages named were under observation. From this number 10,056 deaths occurred from diseases and conditions incident to childbirth, in the ages between 15 and 44. Most important of these diseases was septicemia, which was responsible for 4,321, or 43 per cent., of the total. Albuminuria and convulsions caused 2,654, or 26.4 per cent., of the total. It will be seen that these two conditions accounted for 69.4 per cent. of the total deaths from causes incident to childbirth. The figures relating to mortality on account of childbirth in the Metropolitan company are steadily improving, due, as is said, to the extension and improvement of the prenatal and postnatal nursing service inaugurated in 1909. In 1916, of a total of 160,843 women policy holders visited during illness, 41,572, or 25.8 per cent., were cases resulting from diseases or conditions incidental to the puerperal state. In the period between 1911 and 1916 the death rate among white policy holders from these causes fell 10.7 per cent., the decline in mortality from septicemia being 17.3 per cent.

RELATIONSHIP OF FOCAL INFECTIONS TO CERTAIN DERMATOSES

FURTHER OBSERVATIONS *

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The present paper is in a way a continuation of a former paper,[1] and a review of the conclusions presented then in the light of further observations and experience. We were very much pleased when we were asked to choose this subject, for it is a field in which we feel ourselves comparative pioneers. As far back as 1905, we reported[2] cases which we considered due to hematogenous infection of the skin. Of course, we lay no claim to priority in this field; it is very well known that, according to Gosse,[3] Mackenzie called attention to the connection between rheumatism and erythema nodosum in 1886, and since that time numerous references have been made to a connection between rheumatic infections and various dermatoses. However, it was not until the epochal work of Billings and Rosenow that we really had a base of facts from which to work. With the proved relationship of focal infections to more or less widely disseminated infection throughout the body we found ourselves in a better position to prove that the skin may suffer from such infections as well as the joints, muscle, heart, nerves, and other structures.

Now if we dermatologists have one fault, it is that in our enthusiasm, in our desire to clear up the many problems of diagnosis and etiology, in our efforts to place our treatment on a really scientific and rational basis, we have more than once gone to the extreme in taking up new fads and theories. How often what we have acclaimed one day we have had to renounce the next! Theories have come and gone — uric acid diathesis, autointoxication, trophoneuroses, internal secretions, anaphylaxis, focal infections—each hailed by the enthusiasts as the explanation of all the unsolved problems. Only too often the pendulum swings as far to the other extreme when the reaction comes, leading to denial of any value to the theory or to neglect of study of the subject entirely. Now this is ever our danger: that we are apt to lose our impartial judgment and render valueless any observations we have made, owing to prejudices and preconceived theories; we take sides in a controversy before we have sufficient data at hand. Rather should we make it a point to take no sides in controversial argument, but to act as impartial judges in bringing out all the evidence, then, as impartial jury, weigh its importance. We should be careful not to minimize, distort or conceal any evidence which may be opposed to what we have already begun to believe, nor to exaggerate what tends to prove our views correct. In this way we shall the sooner arrive at well founded conclusions on which further investigations may be based; in this way we shall more surely get all the possible value out of any subject, and in this way we shall avoid the errors of faddism in which all of us have fallen at some time. It must be remembered, too, that even if we are disappointed by finding that what promised to open up a tremendous field in diagnosis or treatment has proved to be quite otherwise, still we have not wasted our time entirely; we shall have gained knowledge at least, and with every investigation we narrow down the number of possible causes and make more certain the ultimate solution of our most dfficult problems.

RELATION OF DERMATOSES TO FOCAL INFECTIONS

For several years now we have been trying to determine what connection there might be between any of the dermatoses and the focal infections or infections commonly considered as usually or frequently due to focal infection. We tried not to allow ourselves to be influenced by any preconceived ideas; even when the dermatosis was of a character that made it certain to us that such infection could play no part, still we have made it a point to inquire about previous attacks of sore throat, tonsillitis, pyorrhea, abscesses in the mouth, antrum and sinus infections, pain around the joints or in muscle, nerve or tendon, endocarditis, pericarditis, varicose ulcers, appendicitis and similar infections. Also we have examined the mouth, throat and nose in practically all cases. In many cases we were unable definitely to locate any focus of infection, although we were fairly sure of its presence, owing to the expense and time which would have been necessary for a thorough examination.

In many other cases we were unable to disprove the possibility of a focal infection, even though we felt that there was no evidence of such infection, owing again to the impossibility of making the necessary examinations in every case. Patients with a slight dermatosis are not willing, as a rule, to have their teeth examined by the roentgen ray, suspicious fillings removed, their throats, antrums and sinuses examined—it simply is not feasible in the great majority of cases. What we can do and what we have tried to do is to get a thorough history of the presence or absence of any signs of focal infection, of any rheumatic attacks or allied conditions, and then note the state of the tonsils, throat, nose, mouth and teeth. This does not exclude, we admit, the possibility that the patient has an unsuspected infection in one of the sinuses, a pyosalpinx, a cholecystitis, vesiculitis, cystitis, prostatitis, appendicitis, any of which conditions may be present without pain or other appreciable symptom, even without apparent effect on the patient's health; also any of these conditions might furnish a constant or intermittent stream of infection or products of infection, whereby direct or indirect reactions in the skin might be caused without other tissues or organs being affected sufficiently to cause symptoms.

The burden of proof, however, certainly lies with the affirmative and we should not be asked to believe that a person without discoverable focus must have a focus because he has a dermatosis which we are trying to connect with such infections. It is bad enough to be offered the mere presence of a focus of infection as proof of the same connection. In the first place, the mere coincidence of any dermatosis with foci of infection should be considered as suggestive only. We must remember the many possible conditions which may act as foci of infection; we must remember how many people have one or more of these conditions, and how few people are actually free from any focus whatever. Since many people suffer from

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* Read before the Section on Dermatology at the Sixty-Ninth Annual Session of the Americal Medical Association, Chicago, June, 1918.

[1] Ravitch, M. L.: Focal Infection in Relation to Certain Dermatoses, The Journal A. M. A., Aug. 5, 1916, p. 430.

[2] Ravitch, M. L.: Kentucky State Med. Jour., 1905.

[3] Gosse, A. H.: Erythema Nodosum; An Aanalysis of a Hundred Cases, Practitioner, London, 1913, **91**, 240.

different foci of infection without any skin manifestations, it is not surprising that we find many dermatoses coincident with focal infections; the wonder is that we find so many in whom no focus can be found. At any rate, the proportion of persons having some focus of infection is so large, that to find a high ratio in some dermatosis is not enough. The ratio must be distinctly higher than the usual ratio. The coincidence of focal infection and a dermatosis is by itself practically proof of nothing. It merely serves to add value to other evidence.

FURTHER OBSERVATIONS

There are other ways in which we may endeavor to determine the connection than by noting coincidence of the two. For instance, when the recognized treatment has been given a thorough trial and failed and there are undoubted foci of infection, the dermatologist is warranted in doing what he can to persuade the patient to get rid of these foci, not only for the possible effect on the dermatosis, but because we know that these foci are constant menaces to the patient's health. We then have the opportunity to study the effect on the dermatosis after the removal of the focus. The tendency of many dermatoses to disappear spontaneously must be remembered, and therefore we must not accept too readily the often temporary improvement that follows tonsillectomy or other procedures as proof that the focus removed was the etiologic factor in the case. Before these cases are recorded as evidence of anything they should be watched over a long period, and relapses or recurrences noted, also any other symptoms of focal infection, for all foci may not have been removed, or a little tonsillar tissue left in the tonsillar bed may become hypertrophied and cause more trouble than before. There are, of course, many other methods of gathering proof in these cases, such as pathologic and bacteriologic examination of the lesions to ascertain whether direct infection of the skin has occurred and whether this infection is of the same character as in the focus. As our various methods of differentiating strains improve, we may hope to be able to recognize subdivisions in the streptococci, staphylococci and other forms, just as we have succeeded already in dividing the pneumococci into four types according to their serum reactions, also the meningococci and parameningococci, and the typhoid and paratyphoid. Experimental inoculation with the different strains should prove of greater value, too, when we can distinguish between the strains. Experiments on the effect of injecting sterilized pus from closed foci may prove enlightening by showing the possible action of such pus in causing anaphylactic or toxic reactions. However, we, as dermatologists, are more concerned now with what has been discovered and what we may discover through clinical observation.

INFLUENCE OF FOCAL INFECTION IN CERTAIN DERMATOSES

Fairly early in our work we noticed that we were more suspicious of a focal infection cause for erythemas than for any other dermatosis. This was partly due to our knowledge of the work of Rosenow and others in erythema nodosum, partly to the fact that we encountered many forms of erythema in mild and severe septicemias, rheumatism and similar conditions. Several cases of erythema multiforme, exhibiting many small hemorrhagic lesions and occurring during early stages of generalized joint, heart and kidney infection came under our notice. Study of these lesions revealed that they were practically small abscesses, infection of the capillaries with cocci, with damage to the endothelium and adjacent tissue, hemorrhage and infiltration with round cells, sometimes small necrotic areas; however, the necrotic areas were too small, the extension of the infected area too limited, the proteolytic action too feeble to often result in the macroscopic formation of pus or extension of the pus to the surface. The lesions usually retrogressed during favorable progress of the case and fresh crops appeared during relapses. The extent of the dermatosis was not a measure of the severity of the case, since the dermatosis was entirely absent in several severe cases and present in mild ones. Erythema iris was encountered in several cases of acute exacerbation of chronic rheumatism. Cases of erythema nodosum usually occurred in rheumatics, though not necessarily during exacerbations or acute stages. On the other hand, we have had typical herpes iris, as well as other forms of erythema, in which we could demonstrate no focal infection and which had no other symptoms of any kind. Although some of the cases of erythema which we considered of infectious origin showed certain characteristics not usually seen in noninfectious erythemas, there was absolutely no difference in the appearance of the erythema iris cases as far as we could judge, whether they were of infectious origin or otherwise.

The urticarias and angioneurotic edemas were probably next to the erythemas in apparently showing connection with rheumatic or focal infection; yet here, too, the majority of such cases did not seem to us at all so connected. These cases, especially the urticarias, nearly always show an eosinophilia, and experimental work in anaphylaxis has shown such an intimate connection between the anaphylactic reaction and eosinophilia that this alone would turn our attention to the possibility of anaphylaxis playing a part in the causation of these dermatoses. Combine with this the appearance of urticarial eruptions as one of the symptoms of experimental anaphylaxis and the well known fact that urticaria often appears following ingestion of certain foods or exposure to certain animals or plants in susceptible individuals, and we have a fairly firm connection established. If the focal infections, then, are the cause of certain urticarias it is natural to suspect that it is through an anaphylactic phenomenon, although it is possible, of course, that this may not be true in any or all these cases. With the angioneurotic edemas one would include the possibility of there being an actual infection or toxic irritation of certain trophic nerves.

We might divide purpuras into three classes: (1) cases accompanying focal infection, especially rheumatism, and probably due to that cause; (2) cases due to anaphylaxis, and (3) cases of unknown or other origin.

Herpes zoster has been attributed to infection of the posterior root ganglions. Cocci have been found present in this tissue and a similar infection has been produced by injecting this coccus into the blood stream. We can only say that we have seen very few cases of herpes zoster that were due to infection, but we have seen many cases certainly due to other causes, such as arsenic. In some cases we could find no focal infection nor other explanation. In some cases the patient gave a history of trauma or exposure; these may have been due to focal infection lodging in chilled or injured nerve structures. Evidently a herpetic eruption may result from irritation of certain nerve structures and this irritation may occur in more ways than one.

Among the eczemas we find cases of such widely varying etiology that it is possible that focal infection may be among the causes. We have seen eczemas due to nephritis and disappearing when the renal function was restored sufficiently. We have seen eczemas which are considered due to disturbance of internal glandular sécretion, such as the breast-fed babies of hyperthyroidic mothers, and the eczema cleared up promptly when the baby was taken from the breast and given a little iodid. We have seen eczema from surplus of carbohydrate or fat in the diet; at least, correcting the diet resulted in a cure. We have seen trade eczemas; when the patient stopped working in the chemical, drug or other substance responsible the eczema yielded to mild external applications. And we have seen many cases of eczema in which we could find no cause, search as we might. We have not in our own practice seen any case of eczema which we thought due to focal infection. We admit the possibility of a toxic action on the skin from such a focus producing an eczema and we have reported a case apparently due to an ulcerated appendix.

Scleroderma has usually in our experience been easily connected with disturbance of thyroid secretion. If focal infection plays any part in its causation we should judge that it must be through affecting the thyroid. No other mode of action seems feasible to us.

Vitiligo we mention only because it has been mentioned in this connection. We absolutely fail to see how the two can be connected.

Psoriasis, also, must be considered. In the first place, various authors have written of a rheumatic factor in this disease; Chipman[4] reports finding apical abscesses in several psoriatics. Autogenous vaccines from the patient's throat or tonsils have been employed; in fact, we have tried out some experiments along this line in our own laboratory during an investigation into the cause of psoriasis. Our conclusions then are our beliefs now: that psoriasis is not due to an infection of the skin structures; it is not due to a communicable virus in the skin or blood; it cannot be transmitted by any way that we know; it occurs in individuals who may be otherwise perfectly healthy; the attacks do not occur with any relationship to rheumatic attacks; lesions in rheumatic patients show no sign of clearing up with amelioration of the rheumatic symptoms; the lesions likewise show no relationship to tonsillitis or sore throat, so that, thus far no connection has been established between focal infection and psoriasis, and we do not think there is any.

Lichen planus seems as unlikely to be due to focal infection as any condition we can mention. We grant, not for the sake of argument, but to avoid argument, that it might be possible for the skin to react in all these totally different and diverse ways to various focal infections, forming an erythema in one person, a psoriasis in another, a vitiligo in another, a wart in another, a freckle in another, but we do insist that it is too far fetched to insist for a moment that the skin really does react to these mysterious and diversified influences in such limited types of infection as we are now considering.

OTHER FORMS OF INFECTIONS

There is another group of cases of which I wish to speak—cases due to internal blood-borne or lymph-borne infections, yet not true focal infections by any means. For instance, furunculosis and carbunculosis may be local infections at first, then gain entrance to the blood stream and appear in other parts of the body for months and months. Erysipelas following infected wounds, or even septicemia, belongs to this group, too. Somewhat different from the foregoing are those erythematous lesions of nose, throat, or face commonly associated with ulceration in the nose, fistulas of the gums or other infection in adjacent tissue. One or two cases of acne rosacea have seemed to come in this category, although the majority show no connection with focal or other infections unless local and external. The other types of acne were never associated wth focal infections in our experience.

SUMMARY AND CONCLUSIONS

To sum up what we have gathered from our own observations, the observations of other dermatologists, correlated material from internal medicine and other specialties and the reports of the pathologists and bacteriologists, we present the following conclusions:

1. If we are to gain information from observation we must try to maintain a strict impartiality.
2. We must use other methods of gaining knowledge in this field, such as laboratory experimentation.
3. We must remember the large percentage of people who have one or more form of focal infection and not accept a certain number of coincidental cases as proof.
4. Though we acknowledge other ways than direct infection of the skin by which focal infections may be causative of dermatoses, still we must not assume, without direct proof, a hypothetic power of focal infections to cause such a variety of reactions as has been mentioned in this connection.
5. Focal infections—and in that class we include those conditions, such as arthritis, endocarditis, neuritis and similar affections, which, it is now admitted by most authorities, may result from such infections—are causative of a small percentage of such dermatoses as the erythemas, urticarias, purpuras and perhaps herpes zoster.
6. Some cases of the dermatoses just mentioned which have lesions identical with the conditions referred to, are not due directly or indirectly to focal infections.
7. We can see no relationship between focal infection and such dermatoses as psoriasis, lichen planus, pernio, acne, vitiligo, scleroderma and alopecia areata.
8. Although these conclusions are based on work covering several years and a careful study of the work of others, still they are only tentative, not final; we expect them to be changed, more or less; we are not taking either side in this matter, but are open to correction from the experiences and experiments of others, recognizing that our entire point of view may be changed tomorrow.

Sudden Paralysis of Ocular Muscles.—Wertheim Salomonson writes to the *Nederlandsch Tijdschrift* to call attention to seven cases recently encountered in which children and adults developed a sudden, peculiar paralysis of the ocular muscles. It was accompanied by gastro-intestinal disturbances only in a few, but he lists the cases as "botulism." The outcome was favorable in all.

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[4] Chipman, E. D.: Focal Infection in the Etiology of Skin Disease, Jour. Cutan. Dis., 1917, 35, 646.

THE ETIOLOGY OF LICHEN PLANUS *

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In discussing the etiology of lichen planus most writers have been content to enumerate certain generalities as to age, sex and environment, and to epitomize our ignorance in some such phrase as "the exact etiology is unknown" or "the causes are obscure." Of those who take a definite stand on the question, some hold the view that the disease is connected with infectious microbic agents or that it is due to a toxemia, while others believe it simply the outward expression of deranged nerves, a condition resulting from overwork, grief, worry or emotional crises.

VIEWS HELD REGARDING THE ETIOLOGY

In Great Britain, Norman Walker believes the anatomic appearances suggest an infective inflammation and cites a severe case of lichen in a professional golfer, inferentially indicating that the disease is not due to "nerves" because occurring in one who typifies the phlegmatic temperament; Malcom Morris, on the contrary, places lichen frankly among the diseases due to nerve disorder.

French writers, including Brocq, Darier and others, incline strongly to the theory of nerve influence.

Of the American dermatologists, Fordyce, Montgomery and Alderson and Engman and Mook suggest toxemic or microbic elements as the paramount etiologic factors.

One may roughly classify the opinions of these three schools of dermatology as follows: (1) British, divided; (2) French, favoring nerve theory; (3) American, tending strongly to theory of infection.

INFECTION FROM DISEASED TEETH

In connection with the pathology of the disease, Ormsby states: "Many observers believe that lichen planus is a constitutional disease with cutaneous manifestations, produced by an unknown toxic agent acting on the nerve centers." This approximates the view which it is the purpose of this paper to suggest, namely, that lichen planus may result from systemic toxemia or bacteremia, the origin of which is most often, if not always, in the teeth.

The theory of focal infection as the chief etiologic factor in lichen planus is not new even though it receives little if any notice in the most recent editions of American textbooks. It was definitely suggested before this section in one of the discussions at the 1915 meeting. It was mentioned again before this section in 1916, and was further the subject of extended discussion at the annual meeting of the American Dermatological Association in 1917.

If it may not seem too insistent the suggestion is respectfully reiterated before this section in 1918 that the most probable exciting cause of lichen planus is tooth infection. Further, so many reasons exist which suggest nerve involvement, we may tentatively add that the nervous system plays a complementary part in the production of the lesions to the extent that either special vulnerability to any toxic or bacterial substance obtains in certain individuals, or that definite tissue affinity is present for a special toxic or bacterial substance in any individual.

It would seem that ample clinical observation alone will suffice to establish the relationship of lichen planus with focal infection. If a part be conceded to the nervous system the decision as to whether it is a question of specific tissue affinity or simply one of diminished resistance following overwork, emotional excitement and similar influences must rest rather on the fulfilment of the usual laboratory postulates.

Unfortunately the exigencies of the military situation have prevented the elaboration of this idea as planned. It will be the aim of this paper, therefore, to present a short series of typical histories from private practice and to indicate a few reasons why tooth infections are frequently overlooked.

In addition to the case histories which follow, there might have been included, if available, the records of numerous others seen in hospital services in none of which was evidence of tooth infection lacking.

REPORT OF CASES

Case 1.—H. K., an ex-prisoner of war, who had escaped after passing through a period of marked mental stress, presented characteristic papules on the flexor surfaces of the arms and forearms as well as the trunk. Repeated and thorough treatments with arsenic and mercury both by mouth and subcutaneously, as well as local applications, failed to ameliorate the condition. Roentgenograms revealed apical abscess of a molar tooth. A few weeks after this he received proper surgical treatment, the lesions resolved and although a year now has passed there has been no recurrence.

Case 2.—Mrs. B., a stout woman, of nervous temperament, who was easily fatigued and easily irritated, presented marked papules on flexor surfaces of the legs and inner aspect of thighs, accompanied by severe paroxysms of itching. When referred to me the usual general and local remedies had been employed without avail. Roentgenograms revealed a definite abscess about a molar tooth which was removed. Following this treatment the patient went on a vacation to the country and in two months the cure was complete.

Case 3.—A. M., a middle aged man inclined to obesity, a heavy eater and smoker and a moderate drinker, presented a papular eruption on the outer aspect of both legs. Some of the lesions were discrete and some had coalesced into infiltrated patches the size of a 25-cent piece. The treatment consisted of restricted diet, avoidance of alcohol, tobacco and all stimulants, together with the internal administration of red mercuric iodid and the local application of the ultraviolet rays. Although the roentgenogram had revealed definitely abscessed areas about two teeth, the patient demurred when treatment of them was proposed. Under the treatment noted some improvement was registered, but a cure did not follow, and when later the treatment was relaxed an exacerbation occurred. On resumption of the treatment, improvement was again noted and the patient desired further delay before undergoing treatment for the abscesses of the teeth. When last observed the lesions, then of some six months' duration, were still apparent.

Case 4.—Mrs. H., a young woman with inclination to overweight and a somewhat nervous temperament, complained of widespread lichen planus papules involving the flexor surfaces of wrists and arms, the trunk, legs and thighs. When the possibility of tooth trouble was suggested it was promptly and vehemently repudiated on the ground that she had just paid a dentist $600 for professional services. Nevertheless, a series of roentgenograms was made and six infected areas were disclosed. The subsequent recommendations of a dental surgeon called for such radical treatment that the patient elected to suffer from lichen planus rather than undergo the surgical treatment indicated. The lesions, which were acute in type, responded in about ten weeks to treatment with red murcuric iodid internally and calamine lotion externally.

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* Read before the Section on Dermatology at the Sixty-Ninth Annual Session of the American Medical Association, Chicago, June, 1918.

CASE 5.—Mr. A. was a middle aged man with classically arranged whitish papules on both lateral walls of the buccal cavity. This patient presented palpably diseased conditions of the teeth with pyorrhea. He came from a distance, was seen once only, and was advised as to treatment of teeth. Results not known.

CASE 6.—J. R., a man, aged 30, by occupation an electrician, presented typical lichen planus papules of both forearms. Examination of the teeth revealed an abscess of a crowned bicuspid tooth. Treatment of this condition was recommended, but the case could not be followed further.

CASE 7.—Mrs. A., an elderly woman, with no evidence of nervous temperament, complained of a papular eruption on the hands and wrists of one month's duration. Although several stumps of infected teeth were present, no treatment of them was attempted, because the lesions resolved under the internal administration of red mercuric iodid.

CASE 8.—Mrs. G., a middle aged woman of exceptional tranquillity and poise, came with characteristic papules of hands and forearms. Itching was severe. Rather prompt disappearance of lesions followed the use of biniodid of mercury. In one year there was a recurrence and the same treatment was not effective. On this occasion an abscessed tooth was found and treated. Recovery followed in a few weeks.

IMPORTANT FEATURES OF THESE CASES

Now an analysis of the general factors involved in these cases would possibly not vary greatly from that of a much larger series.

As to age, no patient was under 30; the average was about 45. The number of men and women was exactly the same. In only one patient was there history of marked emotional disturbance. Of the four women concerned, only two were to be classed as "nervous," while of the men not more than one would fall into that category, so that the proportion of those palpably nervous is possibly no greater among those suffering from lichen planus than in those free from it, at least as far as this series reveals.

The question of age is of additional interest because it is a common observation that lichen planus is rarely observed before the first two decades of life are passed. This squares perfectly with the assumption that it may originate in a tooth infection, for such infections occur with relative infrequency in those under 20 years of age.

SOURCES OF ERROR

In attempting to prove a connection between any condition whatever and tooth infection, certain definite principles must be established. Several years ago in one of the section discussions one of the members remarked that only a certain small percentage of some skin disease in his practice showed evidence of tooth infection. It has occurred to me many times since then that had he based his conclusions on data procured in the same way that I was procuring mine at that time, the results might reasonably be expected to have been even less convincing. When the conception of focal infection first became widespread it was my custom to inquire of the patient's dentist if there was a possibility of any infective area about the teeth. The percentage of positive reports was so small and negative reports were so often rendered, only to be nullified later by roentgenograms, the fixed rule became soon established that only work from approved laboratories was considered as having significance, and the opinion of no dentist was given any weight unless good evidence was at hand as to his qualifications to approach the subject from a truly surgical point of view.

The mere statement of a patient's dentist that there is no focal infection is insufficient; his statement may be correct, but in no case can the question of infection be conclusively settled without roentgenograms. Again, the fact that a patient claims to be toothless, except for the artificial variety, need not be convincing, for the reason that hidden stumps may be revealed under the searching eye of the roentgen ray.

Still another source of error is found in the failure to obtain cure after admittedly infected teeth have been extracted. I have had occasion to observe the unfortunate results which followed in several instances when such teeth were "pulled." By reason of the unsurgical procedure certain infective elements were left behind and these combined with the trauma caused the development of a secondary infective process of greater severity than the primary one.

In this connection it is gratifying to point out the work that is being done by Novitzky,[1] who takes the stand that any dead tooth left in the body will sooner or later become a source of local or systemic infection. Recently he has emphasized two points: (1) A microorganism, a poisonous protein, or a toxin introduced into the blood stream by way of cancellous bone would be more active than would be the same amount if introduced into the stomach, and (2) on account of ills resulting from the retention of dead teeth in the jaws and on account of the impossibility of rendering dead teeth permanently aseptic we must conclude that teeth should not be devitalized.

Novitzky's technic for the removal of dead teeth is partially described as follows:

> Under local anesthesia the gums and the periosteum may be cut loose and retracted along the entire side of the jaw if this is necessary in order to gain space for operating. If the gums are carefully sutured back in normal position against the teeth, reattachment will take place. Ordinarily it is sufficient to cut a triangular flap with the apex pointing to the gingival margin of the tooth to be removed. This flap is raised and held back. Enough bone is removed with the chisel to give access to the apical region. The tooth may be hooked out sidewise, either before or after the apical exploration and curettement, depending on whether or not the entire root length of the buccal plate has been removed. The external periosteum flap is pulled into the opening at completion of the operation with a suture.

The advantages of this technic are: The avoidance of fractures, the opportunity for complete currettement, the avoidance of septic bone, granulating and low grade suppuration.

This may appear as a digression from our subject. Its vital relation, however, will be felt by those who have had the unpleasant experience of seeing their patients grow worse instead of better on removal of dead or diseased teeth simply because the dentist to whom the work was entrusted did not base his procedure on sound surgical principles. Its importance in relation to the etiology of any disease lies in the fact that if we believe the infective focus removed clearly, when in reality it is more septic than ever, we are certain to entertain false opinions as to its relationship with the disease in question.

CONCLUSIONS

1. In the study of a limited number of cases the only constant factor was tooth infection.
2. The rôle played by the nervous system remains to be determined.

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[1] Novitzky, Josef: Dead Teeth, New York Med. Jour., 1918, 107, 548.

3. Great care must be exercised in the diagnosis of infected teeth and the results of operation should not be used as the basis of statistics or opinions unless performed by a competent surgeon.

ABSTRACT OF DISCUSSION

ON PAPERS OF DRS. RAVITCH AND STEINBERG, AND CHIPMAN

Dr. Richard L. Sutton, Kansas City: I have been impressed with Dr. Chipman's conservatism. I want to call attention to an excellent monograph on focal infections by Duke, which is just off the press. In it you will find a lot of information on many obscure points. Of course we are interested in focal infection mainly from a cutaneous viewpoint. Recently, in an aged man, suffering from chronic pemphigus, we found eleven apical abscesses; after these had been eradicated and the patient's mouth thoroughly cleaned up, the skin lesions promptly disappeared under the use of simple, soothing applications, and there has been no recurrence during a period of several weeks. In my opinion, all cases of discoverable focal infection should receive prompt attention, even though there is no traceable connection between them and the disease for the relief of which the physician is consulted. In acne, particularly, you will find that the removal of a pair of badly infected tonsils will often prove a long step toward bringing about the cure of the cutaneous disorder.

Dr. King Smith, Toronto: The procedure now in force in the Army affords a good opportunity to see these cases. Every man in the hospital in France and in other places has his teeth examined. This is a routine examination made by the dental department, not the thorough examination with the roentgen ray. There is no class of men whose teeth are so bad as the British Tommy; he has pyorrhea and every other kind of trouble. In a hospital where 21,000 passed through, skin diseases were very rare, except for pus infections. The British Army probably had only one dentist to 1,000 men, whereas the American and Canadian armies have a dentist for every 500 men; so the teeth are being well looked after. With so much focal infection of the teeth I was interested to see so little skin infection. As to infection from suppurating sinuses, throughout the Canadian Army last year a large percentage of returned men had a dermatitis resembling an eczema. We began to examine them by different methods and soon it was noticed that practically all had returned on one hospital ship. Word came that every suppurating case coming into that port must have swabs taken and a bacteriologic examination made. It turned out to be a diphtheritic infection. There was no diphtheria on the ship, but all these cases were due to this bacillus, when there had been no sign of diphtheria for months, and all came from this one hospital ship.

Dr. John E. Lane, New Haven, Conn.: I am a firm believer in the clean mouth and in the removal of pus wherever it may be found. However, I do not think that we yet have sufficient evidence for believing that focal infection is an etiologic factor in all the diseases that have been mentioned. It seems to me that in deciding the etiologic importance of focal infections a lot of rubbish must be cleared away before we get down to the productive soil of conclusive experiments. Focal infection does not always necessarily affect the general health. One important question is whether the infection is confined under enough pressure to cause absorption. The wall of an abscess is a very poor organ of absorption, but if it is confined and under pressure there undoubtedly will be some absorption though it is frequently difficult to decide whether this is taking place. It is evident that in many cases of pyorrhea with free drainage there is little or no absorption and no constitutional symptoms of absorption. All the patient is getting is pus and bacteria, which he swallows and digests, with health which is astonishingly good under such filthy conditions. A much better absorptive surface is offered by the tonsils than is found in pyorrhea. It is more difficult to determine the rôle played by apical abscesses. I am not at all convinced whether focal infection is or is not an etiologic factor in any of the conditions discussed. I am convinced that there is an etiologic relationship between focal infections, especially of the tonsils and of the teeth, and many of the arthritides.

Dr. Frederick G. Harris, Chicago: I am not yet convinced of the rôle that focal infection plays in the etiology of all these various dermatoses. If we assume that these infective foci contain any of possibly half a dozen different organisms, we find that these few micro-organisms can cause very many different diseases, varying in type from eczema to pemphigus and from lichen planus to dermatitis herpetiformis. I think it is time for us to get down to true scientific work. Why have not the various organisms been isolated and identified? Let us see if the same disease supposedly due to apical abscess shows the same bacteria as the abscess. Then, let us study the metabolic products of these bacteria both chemically and in their effect on the skin. It seems to me that focal infection is an accessory after the fact and not before.

Dr. M. Scholtz, Cincinnati: A sufficient number of cases has been reported to establish firmly the causative relationship of focal infection to skin diseases. However, focal infection should not be considered as the sole etiologic factor in all cases. Other pathogenic factors should be considered in possible correlation, all working, as it were, in a vicious circle. For instance, focal infection may induce skin anaphylaxis due to proteids of bacteria or their toxins; this in its turn may affect the system of endocrine glands with a new train of symptoms. In regard to lichen planus, there is no question that some of the cases may be traced to focal infection, but why should we limit the sources of it to teeth and tonsils only? On the other hand, the fact that the patient improves after the removal of a focal infection does not always establish the causative relationship. The patient may get well simply because after a weakening or toxic effect of an infected focus had been removed, the system may regain vitality enough to combat other coexistent pathogenic factors which may be present in the case.

Dr. Everett S. Lain, Oklahoma City: I am still largely of the opinion that the field of focal infections in dermatology is quite limited. I have observed, as have Dr. Chipman and Dr. Ravitch, the various skin lesions in connection with focal infections in a casual way also, and have tried to follow one certain disease for several months, studying the cases carefully. Again, I want to stress what has already been said, that the mere passing on the mouth by the dentist is not at all confirmative, especially if that dentist is the one who has put the crowns on the teeth or done the bridgework. It is always more satisfactory to have the roentgenographic work done in one's own office than to depend on somebody else on account of the various angles which are needed for correct diagnosis. My experience with urticaria has not been positive in regard to focal infection. In lupus erythematosus I suggest that if every case is carefully noted I think we shall see that this disease also bears a very close relation to focal infection. With reference to zoster sometimes being caused by arsenic, that is an established fact, but could that not be an exacerbation due to the breaking up or scattering of these toxins, the same as we have seen in the secondary stages of syphilis after giving arsenic? The extraction of a tooth often lights up the trouble, as has been mentioned.

Dr. David Lieberthal, Chicago: I wish to call attention to the familial occurrence of lichen planus, which strongly suggests infection as a cause. There are about thirty cases on record which showed simultaneous appearance of the disease in two or more members of the same family. The theory of focal infection has created a great deal of enthusiasm and confusion and caused many patients to lose teeth unnecessarily. If methods could be devised to drain pus foci around teeth without sacrificing the latter, no harm would be done nor adverse criticism heard to focal infection around teeth being offered as an etiologic factor.

Dr. J. S. Eisenstaedt, Chicago: In the discussion of lichen planus I am traveling on thin ice, for the reason that my results are less favorable in the treatment of lichen planus than any other disease. I have treated lichen planus in professional wrestlers, who are not of a nervous type. Several years ago I had patients whose parents had syphilis. I thought I saw a relation, but the patients had negative Wassermann reaction and it was probably only a coincidence. I have obtained results by giving mercury internally or by injection; I have also had results from arsenic—Fowler's solution, or sodium cacodylate, or sodium arsenate, and then again other cases did not respond to that treatment. Among other cases seen recently was a case in which the teeth were very bad and I had them removed. Afterward I used mercury and arsenic, but the improvement was very slow. I believe that lichen planus is still mysterious as regards its etiology, and equally so as regards the prognosis from the usual types of therapy.

Dr. K. A. Zurawsky, Chicago: Dermatologists have been very unjustly accused of splitting hairs regarding the classification of diseases, and now we are going to the other extreme and generalizing everything under one head. I would like to make a few objections. In the first place, to say in the twentieth century and the present status of dermatology that certain diseases are due to "focal infection" without stating what that infection is, is bearing a little bit too hard on one's credulity and powers of imagination. There can be and there are some skin diseases which are due to infections; but we cannot expect that the cleaning out of an apical abscess or the taking out of the tonsils will remove all the causes of the half-dozen or dozen, or two or three dozen different diseases. Our friends, the dentists, who have started so much of the talk about focal infection, have given us the idea about focal infection, but have not told us of what that infection consisted. They have told us of the staphylococcus and streptococcus and other bacteria, but have never isolated any one of them, and until they do we should not talk of focal infection as a definite factor. Dr. Scholtz mentioned some of the ductless gland disorders that might be considered as the cause of local reaction. I think anything of this kind may exaggerate the patient's condition, whatever may be the etiologic factor.

Dr. John H. Stokes, Rochester, Minn.: Focal infection certainly impresses one as having been the stamping ground of the *post hoc propter hoc* type of clinician. The conservativeness of Drs. Ravitch and Chipman's papers is therefore eminently praiseworthy. Much experimental work is still needed before any of us can feel that the subject has passed beyond the realm of speculation. The mere fact that a lesion clears up following the removal of an abscessed tooth or the use of a vaccine is not yet to be accepted as a demonstration of the causal relation of the abscess or the specificity of the vaccine therapy. Speaking purely as a clinician, I have been much impressed by the apparent relationship between the foci of pyogenic infection in the teeth and tonsils and the generalized exfoliative type of dermatitis. I think a similar type of relationship may exist between pemphigoid eruptions and foci of infection. Several of my cases have seemed to respond exceptionally well to measures directed at a definite focus. I have even seen cases of alopecia areata come on abruptly following unintelligent dentistry and clear up after the removal of abscessed teeth. It must be obvious to any one with even a modicum of critical faculty that argument of this type does not justify sweeping statements at the present time.

Dr. Walter J. Heimann, New York: I have seen some remarkable cases that have cleared up in the same way that Dr. Stokes has mentioned. There is something about focal infection, but what? We are talking about it as being the etiology of skin diseases of a certain type. Everybody here has said that it is not. It may be a contributing factor, and we might look for the prostate gland, the fallopian tubes, the appendix, etc. I protest against the classification of diseases furnished by Dr. Lain. We know that rosacea is due either to gastrointestinal disturbance or to disturbance of the internal organs. This has been proved definitely. As to lupus erythematosus, while we do not know what it is, I am perfectly willing to concede that some cases may be due to focal infection, whatever that may be. I must enter a protest, however, against herpes zoster. We know that that is a definite clinical entity. A man has one attack and is immune. After the herpes zoster has disappeared the focal infection remains. Is it possible for the etiologic factor to cause a disease, the disease disappear and the etiologic factor remain? I think that is one of the greatest absurdities, and I wish that sort of reasoning could be eliminated from scientific discussions.

Dr. Michael L. Ravitch, Louisville, Ky.: I have not changed my opinion in the least. I am very conservative about focal infection and I do not believe that so many dermatologic cases are due to focal infections. I am in the middle of the road and trying to learn the true facts.

Dr. Ernest D. Chipman, San Francisco: We seem to be in the process of being swept by a wave of skepticism. Dr. Harris seems to feel that we should have a lot of experimental evidence in support of certain facts. If a man with diabetes is thirsty, you do not have to go to the laboratory to prove it. If a patient has a tapeworm, we need not go to the laboratory to know that he is hungry. I wish you to consider the connection of focal infection. I do not like the attitude of *laissez faire* in connection with our treatment of skin diseases. I submit that it is time to make an effort to do something constructive. If we cannot support our facts in a clinical way, let us at least do a little reasoning. I do not subscribe to Dr. Heimann's remarks regarding herpes zoster. Ample work has been done there. If one will read the work of Rosenow and Billings he will find that the same kind of organisms have been found in these lesions as in the nerves. It seems to me that if anything has been proved it is the connection between herpes zoster and erythema nodosum. A more extensive study may change my opinion, but at present, it is sure, we cannot ignore it. If we do, it is like an ostrich putting its head in the sand.

Dr. Ravitch spoke as if I was claiming that psoriasis was caused by focal infection, which was not the case. A year ago I reported seven cases of psoriasis that had a focal infection. I gave that simply for what it was worth. Since then I have had a case of psoriasis in which we found two abscessed teeth. They were extracted, the external treatment remained the same and the disorder cleared up. Within a month's time he had a recurrence. That did not square with the fact. The patient said he was sure he still had trouble with the teeth and another examination showed that this was the case. I do not say that psoriasis is caused by focal infection, but in these cases, if the patient has pus which is being absorbed slowly, or which is confined, we do not do our best for that patient if we ignore it. I think we are all agreed that we should do our best for our patients in every way.

As to lichen planus, I am not claiming that focal infection is a definite etiologic factor in this disease, but that it has been present in all the cases that I have seen.

ROENTGENOGRAPHIC STUDIES OF TISSUES INVOLVED IN CHRONIC MOUTH INFECTIONS *

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In a paper[1] presented before this section at the New York meeting last year there was included a tabulation covering a critical examination of 3,000 roentgenographic films of the teeth and adjacent bone of the mouths of 300 adults. During the past year these studies have been continued with results that very closely parallel the previous figures. The present tabulation, which includes that of last year, covers 600 roentgenographic mouth examinations, for each of which ten small films were made—a total of 6,000 films.[2]

The object of this study is primarily to determine as nearly as possible the average percentage of chronic mouth infections, which are of two types: (1) those that begin with inflammations of the gingivae and progress along the side of the root toward the apex, destroying the peridental membrane and adjacent alveolar process—chronic suppurative pericementitis; (2) those which, subsequent to the death of the pulp of the tooth, cause a destruction of the bone about the apex of the root—chronic alveolar abscess. Secondary to the foregoing, other data are being compiled, such as the existing relationship between these mouth infections and the general health, the number of teeth present at various ages, the number of teeth having root fillings, notations as to whether the root fillings are good or poor, and the frequency of alveolar abscess about the apexes of well filled and poorly filled roots. These studies are therefore considered to be of fundamental importance from two points of view: (1) that of chronic mouth infections as a cause of systemic disease, and (2) that of the dentist's technic in pulp treatment and root filling in relation to the occurrence of alveolar abscess.

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* Read before the Section on Stomatology at the Sixty-Ninth Annual Session of the American Medical Association, Chicago, June, 1918.

[1] Black, A. D.: Roentgenographic and Microscopic Studies of Tissues Involved in Chronic Mouth Infections, The Journal A. M. A., Aug. 25, 1917, pp. 599-602.

[2] The 6,000 films, mounted, were exhibited in connection with the presentation of this paper.

An effort has been made to take roentgenograms of the mouths of persons as we meet them on the street, that is, without previous inquiry as to the condition of their mouths or their health, in order that our figures may represent average conditions. The 600 persons included in the tabulation consist of about 300 dental students, about fifty Dental and Medical Reserve Corps officers, about fifty of my own patients, and patients applying for dental service at Northwestern University Dental School. It is believed that the figures represent very close to average conditions for persons of less than 40 years of age, but the number of infective foci in persons past 40 is doubtless too high, because there are included a few who presented themselves because of systemic conditions that called for mouth examination.

Of the 600 adults examined, 78 per cent. are shown by the roentgenograms to have definite areas of bone destruction about the teeth. If we make every possible allowance for variations from the average which these 600 cases may represent, the fact remains that a high percentage of adults have chronic infections involving the maxillary bones. With our present knowledge of focal infections in relation to systemic disease, these mouth conditions constitute a serious menace to the health-producing power and longevity of the people.

AREAS OF CHRONIC INFECTION

The accompanying tabulation records areas of chronic infection about the teeth, in 57 per cent. of persons aged from 20 to 24, 64 per cent. aged from 25 to 29, 88 per cent. aged from 30 to 39, 90 per cent. aged from 40 to 49 and 98 per cent. aged 50 or more. As previously mentioned, the percentages for persons past 40 are too high because of the fact that a number of those included in the tabulation presented themselves on account of their general physical condition. Attention is also called to the fact that a considerable number of persons past 40 who are edentulous are also free from these infections. None of these were included in this study.

The areas of destroyed bone are given in two groups, under the headings "peridental infections" and "alveolar abscess." The term "peridental infections" is used here to cover all areas of bone destroyed along the sides of the roots of the teeth, from suppurations beginning in the gingivae. The term "alveolar abscess" covers all areas of bone destroyed at the apexes of roots, subsequent to the death of the pulps of the teeth.

The peridental infections are very seldom found in the mouths of persons of less than 20 years. They are to be considered as lesions of adult life only, which are more frequent with advancing years. For the group between the ages of 20 and 24, 13 per cent. had infections of this type; those aged from 25 to 29, 29 per cent.; those aged from 30 to 39, 68 per cent.; those aged from 40 to 49, 77 per cent.; those aged 50 or more, 88 per cent. These percentages alone do not tell the full story, as in addition to the increase in the number of persons with advancing years, there is also an increase in the number of areas per person, from four per person of those affected between the ages of 20 and 24 to ten per person in those aged 50 or more.

Alveolar abscesses are found in the mouths of persons of all ages. It would be expected that the number would increase with age, except for the fact that the number of abscessed teeth extracted serves to maintain a balance. In the present tabulation for persons aged from 20 to 24, there are recorded 52 per cent. who have abscessed teeth; for those aged from 25 to 29, 51 per cent.; for those from 30 to 39, 63 per cent.; for those from 40 to 49, 59 per cent.; for those of 50 or more, 50 per cent. The number of abscesses per person does not vary much with age, the average being 2.6 per mouth for those aged from 20 to 24 having abscesses, and the same for those of 50 or more. The lowest was 2.2 abscesses per person for those between the ages of 30 and 39. It is very interesting to note that last year's tabulation of 300 persons showed 59 per cent. with alveolar abscess, while for the 300 added this year only 41 per cent. had alveolar abscess. It is believed that this difference represents in some measure the better realization of the danger of these infections to health, with the result that a larger number of infected teeth have been extracted. No attempt has as yet been made to determine the percentage of abscesses in the mouths of persons of less than 20 years of age.

RESULTS OF QUESTIONNAIRE

It was not practicable to make thorough physical examinations of these patients, and only a limited number of reports of such examinations were obtainable. The effort was therefore made to secure by a questionnaire the best possible information as to the physical condition. Inquiry was made as to enlarged finger joints, muscles or joints which were occasionally painful, condition of the nose and throat, inflammation of eyes, attacks of appendicitis, etc. It is appreciated that this information is not very reliable, as it does no more than give a general idea of the health of the persons examined. Of the 501 included in the questionnaire, 363 are reported as entirely negative as to secondary systemic disorders, seventy-two complained of occasional muscular or joint symptoms, and sixty-six reported well defined cases of arthritis, nephritis, appendicitis, etc. Forty-two, of the last group of sixty-six, were persons of 40 years or older and a considerable number of these presented themselves because of their physical condition. None were hospital cases. The principal value which these figures on systemic conditions give to the tabulation is in showing that the large majority of those examined were in good health, from which fact we may conclude that the number of areas of infection reported are not likely to be far astray in the establishment of average figures, with the exception, already noted, of persons past 40.

The average number of teeth per person is an indication that the mouths have probably had average care by both patient and dentist. It is noted that for the 411 persons in the three groups covering ages from 20 to 39, there is an average of twenty-eight teeth. As the third molars are not constant in development, there is an average loss of less than four teeth per person up to 39 years.

ROOT CANAL FILLINGS

A feature of this tabulation of especial interest to dentists is the occurrence of alveolar abscess in relation to good and to poor root canal fillings. For this study the roots of the teeth were divided into two groups: those having large canals and those having small canals. This division was made because of the differences in technic required. The upper central incisor, cuspid, second bicuspid, and lingual roots of molars, the lower cuspid, the first and second bicuspids, and the distal roots of the molars were classed as having large canals. The upper lateral incisor, first bicuspid and buccal roots of molars, and the lower incisors and mesial roots of molars were classed as having small canals.

TABULATION FROM 6,000 ROENTGENOGRAPHIC FILMS OF TEETH AND ADJACENT BONE IN MOUTHS OF 600 ADULTS*

Age	Number	Systemic Symptoms				Average number teeth per person	Peridental Infections			Alveolar Abscess			Summary		Root Fillings				Large Canals				Small Canals				Alveolar Abscesses		
		No History	Negative	Complaint of occasional muscular or joint symptoms	Well defined cases, arthritis, nephritis, etc.		Number of persons, some bone destroyed at sides of roots	Percentage having bone involved	Average number of infections per person for entire number	Number of persons, some bone destroyed at apexes of roots	Percentage having bone involved	Average number of abscesses per person for entire number	Number of persons having peridental or apical infections or both	Percentage of persons having infections of maxillary bones	Number of persons having root fillings	Total number teeth with root fillings	Percentage of all teeth having root fillings	Number of root apexes not clearly shown	Number of good root fillings	Number abscessed with good root fillings	Number of poor root fillings	Number abscessed with poor root fillings	Number of good root fillings	Number abscessed with good root fillings	Number of poor root fillings	Number abscessed with poor root fillings	Total abscessed with root fillings	Number abscessed, no root fillings	Total abscessed
20 to 24.....	146	9	120	11	6	29.5	18	13	0.6	77	52	1.4	89	57	103	357	8.6	72	85	10	120	83	42	2	88	71	166	43	209
25 to 29.....	119	9	90	14	6	28.5	34	29	2.0	60	51	1.3	75	64	83	338	9.8	60	54	8	111	66	41	4	60	45	123	49	172
30 to 39.....	146	30	79	25	12	26.5	101	68	5.7	92	63	1.4	119	88	116	504	13.0	89	94	8	168	95	46	4	107	90	197	35	232
40 to 49.....	111	29	51	13	18	24.0	87	77	7.1	65	59	1.5	100	90	80	329	12.0	74	60	2	117	75	28	7	42	41	125	36	161
50 and over	78	22	23	9	24	22.0	69	88	9.0	39	50	1.3	77	98	46	167	8.9	32	50	3	54	40	27	2	28	24	66	42	108
Totals...	600	99	363	72	66	26.5	319	53	5.0	333	55	1.4	469	78	428	1,695	9.8	344	343	31	570	356	184	19	413	271	677	205	80

Large Canals: Upper—central incisor, cuspid, second bicuspid, lingual roots of molars; lower—cuspid, first bicuspid, second bicuspid, distal roots of molars.

Small Canals: Upper—lateral incisor, first bicuspid, buccal roots of molars; lower—incisors, mesial roots of molars.

SUMMARY OF ABSCESSES IN RELATION TO ROOT FILLINGS

			Number Abscessed	
Good root fillings, large canals	343		31	
Good root fillings, small canals	184		19	
		527		50
Poor root fillings, large canals	570		356	
Poor root fillings, small canals	413		271	
		983		627
		1,510		677

* Percentage of abscesses for all root fillings, 45; for good root fillings, 9; for poor root fillings, 63.

The figures given in this tabulation are believed to be very close to average figures for persons under 40; for older persons they doubtless show a higher percentage of infection than the average.

The roentgenograms showed 1,695 teeth with root fillings. This is 10 per cent. of all of the teeth in the mouths of the persons examined. Of these teeth, 344 were not included in the special study of root fillings, because the shadows were not sufficiently clear for positive reading. Each root of multirooted teeth was counted separately. There were recorded a total of 343 good root fillings in large canals, of which thirty-one were abscessed, and 570 poor root fillings in large canals, of which 356 were abscessed. For the small canals, there were 184 well filled, of which nineteen were abscessed, 413 poorly filled, of which 271 were abscessed. This gives only 9 per cent. abscessed of all teeth having good root fillings, and 63 per cent. abscessed of all teeth having poor root fillings. Doubtless some in both groups were abscessed before the root fillings were made. It seems that no better argument could be found to induce dentists to be more painstaking in their root filling technic, for here is the opportunity to reduce the total of alveolar abscesses to about one fifth of the present number—an effort very well worth while.

It should be stated that we have been very liberal in classifying these root fillings; if we have erred it has been by placing an excessive number in the "good" columns. It is appreciated that it is not always possible to determine the condition of a root filling by examination of a roentgenogram. Fillings were classed as good if the root apex was apparently filled, or, in those cases in which the root filling did not reach to the apex, if no canal was discernible beyond the root filling. By this plan, all questionable fillings were given the benefit of any doubt.

CHANGES IN DENTAL PRACTICE

The effect of the study of these cases is well shown by the changes that have been noted in the clinic of Northwestern University Dental School. The roentgenographic service has been increased several fold as compared with a few years ago, a total of more than 17,000 films having been made during the past year. In the same period nearly 24,000 teeth were extracted, and the number of artificial crowns and bridges much reduced, while there has been a corresponding increase in the number of artificial dentures made for patients. This is an expression of the changes in dental practice throughout the country. A constantly increasing number of dentists are coming to realize that it is their positive duty to free the mouths of patients from infection, even though this requires the extraction of a number of teeth. But what is of much more importance, there is a determined effort on the part of many to use every possible means of preventing the occurrence of these chronic mouth infections, and those who have seriously undertaken to do so are meeting with a large measure of success. This is preventive dentistry that is worth while, for it is cutting off at the source much systemic disease.

ABSTRACT OF DISCUSSION

Dr. Eugene S. Talbot, Chicago: Dr. Black speaks of so many cases of root filling and then so many abscesses. I would like to have him tell how he knows these are abscesses. My researches have shown that we must classify, that we must know exactly what takes place at the roots of the tooth. Many of these cases that are called abscesses are not abscesses. They are simply absorptions. In all these experiments that I have been doing the last three or four years, with the microscope, destroying pulps of teeth and then immediately conducting the different drugs that we use through the ends of the roots of the teeth, this sequence invariably takes place. The irritation produces an absorption of the alveolar process. It depends on the amount of the irritation as to where that absorption stops. If it is a slight irritation, the absorption of bone will take place and fibrous tissue will remain around the end of the root of that tooth. That absorption may or may not be very extensive. If the irritation is more severe than what I have just mentioned, the fibrous tissue will be destroyed around a certain area, and that absorption and destruction of fibrous tissue takes on the appearance of what is called an abscess under the roentgen ray. I have noticed that many cases which presented conditions that were considered abscesses were not abscesses, but simply absorptions of the alveolar processes and roots and destruction of the peridental membrane at the end of the root of the tooth. If the irritation is still greater, with infection, so that even the fibrous tissue is destroyed, an abscess will form. There are three conditions or stages which we must understand and classify by the roentgen ray. I have not been able to classify these with the roentgen ray. We must first examine the case with absorption in order to show the three different conditions that take place. I want Dr. Black to explain these three different conditions, if he can, and why he calls all these cases abscesses. The other condition is where the fibrous tissue will remain after the absorption of bone. The next is where the irritation and infection are so great that an abscess will form. First, there is absorption of bone and root. The peridental membrane still remains because there is not sufficient irritation to produce a destruction of the peridental membrane and fibrous tissue. Second, the peridental membrane and fibrous tissue are destroyed without an abscess forming. Third, the fibrous tissue remains around the root of the tooth and an abscess forms in this fibrous tissue and remains after absorption of bone has taken place. These are the three actual conditions that occur and are seen with the microscope.

Dr. Thomas L. Gilmer, Chicago: I am in accord with Dr. Talbot's statement that there is in some instances, indication of absorption of the process when no infection exists. After examining roentgenograms, we are sometimes left in doubt, whether abscesses exist or not. There may be a very limited area of bone destruction followed by a thickening of the pericementum when no infection exists. I am of the opinion, however, that in the majority of these cases the areas are infected. My reason for this belief was strengthened by my study of the bacteriology of alveolar abscess. I extracted a large number of pulpless teeth and secured the *Streptococcus viridans* from almost all cases, when the roentgenogram showed rarified areas. Alveolar abscess, when some of the apical peridental membrane has been destroyed, may be cured temporarily by sterilization of the root canal, but it is for a very limited period, because there will be reinfection sooner or later through the organisms being carried to the dead cementum by the blood stream.

Dr. Arthur Zentler, New York: Whether or not the roentgenogram can be relied on to tell the condition present at the apical end of a root is not established. While some doubt has been expressed here as to whether there is or is not an abscess when the roentgenogram indicates absorption, there remains to be shown whether when the roentgenogram does not show absorption, that there actually is no pathology. I have been impressed with this unreliability. Experiments which I carried on to establish whether conservative (electrolytic) treatment is sufficient to cure pathologic conditions at the apexes of roots, or whether apecoectomy is necessary to obliterate the infection, have resulted in the following: First, teeth which were treated conservatively and which in the roentgenogram showed no absorption, were apecoectomized several months after treatment and the cultures have yielded streptococci. Second, the same areas were cultured four or six months later under the same condition as for doing a root amputation, and although the roentgenogram indicated absorption (due to repeated surgical interference), cultures made from scrapings yielded no bacterial growth. To my mind this shows that lack of absorption in the roentgenogram does not indicate sterility, nor does the presence of absorption indicate infection at the end or around the root of the tooth.

Dr. Frederick B. Moorehead, Chicago: The work that Dr. Black has done in his report is reassuring in that it confirms the fundamental things we have believed for some time. I examined 500 cases at the Presbyterian Hospital, Chicago, and reported my results to this section two years ago. My findings were essentially the same as those reported by Dr. Black. Considerable experience and study is required in the interpretation of roentgen films of the jaws, and even to the experienced there will be surprises now and then in the amount of pathology that will be found clinically which did not appear in the film. It must be borne in mind always that the roentgen ray is a relative agent, and while it is the most important factor in diagnosis, it requires experienced interpretation. The fact that one frequently finds more pathology on the removal of a tooth than is indicated by the roentgen ray should make us very careful in concluding from a roentgenogram that a tooth is safe.

As Dr. Gilmer has suggested, there are cases in which it is very difficult to differentiate between a dangerous focus and one that probably is not dangerous. These difficult cases, however, are more or less limited in number and the majority of films indicate conditions about which we may be more or less dogmatic. We found one very striking thing in our patients in the Presbyterian Hospital in noting that there was not a great deal of difference between the ward patient and the private patient in the number of mouth involvements. This is probably due to the fact that the poor people have troublesome teeth extracted while those of means have root canal treatment. We must all become convinced of the danger of chronic infection about the jaws and the necessity for the removal of all types of infection.

Dr. Chalmers J. Lyons, Ann Arbor, Mich.: We must not overlook the mistake that both the dental and medical professions are making today of relying wholly on roentgenograms. I am very much interested in Dr. Talbot's remarks that we should not consider the roentgenographic evidence alone. It is simply one method of making a diagnosis and I am wondering if in the report Dr. Black has made that some distinction might not be made between what he calls an abscess of the roots with poorly filled canals and an abscess of a root with well-filled canals. While the roentgenographic evidence would admit of some error, without a complete history of that particular operation, I do not see how he can classify a tooth with a perfectly or well-filled canal having an area of absorption as an abscess. If that is true, if they can be so classified, then our whole root canal work is in vain.

Dr. William C. Fisher, New York: I am very glad to hear one part of Dr. Black's report in which he studies the good and bad root fillings in order to differentiate them in reading his roentgenograms. He classifies them as cases with good root filling and those roots in which the filling did not go to the apex. This is the first time that I have seen or heard any one attempt to make that statement and I am very glad that Dr. Black has made it, because in that one point

I consider great advance has been made. Dr. Zentler's work is a step in the right direction, especially the manner in which he has investigated the bacteriologic findings. As Dr. Talbot and Dr. Lyons brought out, can we tell whether these areas that we speak of off-hand from roentgen-ray evidence as abscesses are really abscesses unless we have checked up this evidence with other work? Dr. Moorehead said the more we read roentgenograms the better are we able to interpret these facts. No mention has been made of the particular bacteria found other than what is usually found in these abscessed areas. It is a question in my mind as to just how much the system can stand in the way of the normal presence of *Streptococcus viridans* or, as Dr. Moorehead said, in the safe and dangerous zones of infection.

Dr. Arthur D. Black, Chicago: I endeavored to present certain conditions that were shown by examination of 6,000 roentgenograms, and I believe I qualified that by saying that I presented tabulations of the areas of destruction of bone. Then I stated further that in order to simplify the presentation I called one group peridental destruction, and the other apical destruction. The main point I desire to impress is that over 75 per cent. of the people over 20 have destruction of bone about the roots of teeth.

I would base my judgment in deciding on the treatment of any case showing an area of destruction about the root of the tooth, on the extent of the detachment of the peridental membrane from the surface of the root. If the studies of the histologic function and pathologic changes which take place in these tissues are worth anything to us at all, they certainly tell us that where the peridental membrane has been detached and that detachment has been maintained for a time, there will not be a regrowth of this tissue. If there is a hole in the bone about the end of the root of the tooth, showing that the peridental membrane has been destroyed, then I would not bother to determine whether the area is infected or not, as it would not make a particle of difference in the treatment. If the area is not infected today it may be infected through the circulation tomorrow. I have no doubt that a considerable number of these cases go along for a long time without infection, but they certainly present ideal conditions for reinfection. Granting for the moment that by the use of drugs such an area may be rendered sterile, there could not be more than a very temporary advantage because there is no probability of reattachment of tissues to the root of the tooth. When the roentgenogram shows an area of bone destroyed immediately about the surface of the root, I believe it should be treated as though it were an abscess whether there is any infection or not.

There can be no question that the number of persons having infections of the bones about the teeth is very much larger than it ought to be. It must be less in the future, and the burden of reducing it is on the dental profession. At the same time, we must remind the members of the medical profession that there are many other regions besides the mouth in which original foci of infection occur. When we come to realize that 75 per cent. of adults have some infection of the maxillary bones, it seems that three out of every four persons, who go to the physician complaining of some systemic infection, have one or more of these areas in their mouths. I am afraid that too many physicians are jumping at the conclusion that the teeth are the source of the trouble, without making a thorough investigation of other regions, such as the nose and throat, the sinuses of the head, the mastoid, the gallbladder, the genito-urinary tract, etc.

Every adult who comes to us should have a complete roentgenographic examination of the mouth. When each dentist takes on himself the responsibility of knowing that the mouths of his patients are free from infection, he will have made real progress in the prevention of systemic disease.

Dr. William C. Fisher: Do you believe that in any dead tooth perfectly filled or imperfectly filled you have this area whether it has been treated surgically or not?

Dr. Arthur D. Black: It does not necessarily follow that because the pulp of the tooth dies the bone about the apex of the root will be infected. That is the natural thing to happen, but I feel quite satisfied that it does not always happen, otherwise practically every tooth with a dead pulp should be extracted. We are requiring that a roentgenogram be made of every tooth that has a dead pulp before treatment is undertaken. We are getting many films of cases with dead pulps which show no destruction of tissue about the apex of the root. It is a question of following these up for a number of years by roentgenographic examination. My judgment is that there are many cases in which there is no infection beyond the apex of the root.

MALARIA ENDEMICITY OF THE RICE DISTRICTS OF LOUISIANA AND ARKANSAS

WITH SOME OBSERVATIONS ON TYPES OF MOSQUITOES BREEDING THEREIN

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The selection of a site for the establishment of an aviation field amid the rice fields of Arkansas offered an unusual opportunity for the study of control methods for malaria and types of mosquitoes found breeding in this environment. We realized that the control methods must of necessity be of a varied character, but agreed that the control of the human carrier along with the mechanical protection of good screening were most important within the limits of mosquito flight. Therefore the initial step was a sanitary survey to correlate all methods in the 3 mile zone designated as the extracantonment zone, Eberts Field, Lonoke, Ark. This included the town of Lonoke, and work was begun in January, 1918. In addition, absolute control of the breeding of mosquitoes outside of the rice fields was to be sought. The area within which mosquito control measures were taken comprised approximately 12 square miles, the center of which is the aviation field and the town of Lonoke. In the west and south, in this district, rice is grown, the area under cultivation being 2 square miles. From the buildings of the aviation field, the first rice fields are at a distance of 1 mile on one side and three-fourths mile on the other, and just 1,500 feet from the field limits. Rice fields adjoin the town

MALARIA EPIDEMIC INDEX

Ages	Number Examined			Types of Infection									Total Infections, No.	Per Cent.
				Tertian			Estivo-autumnal			Quartan				
	M.	F.	Total	M.	F.	T.	M.	F.	T.	M.	F.	T.		
				Arkansas, January, Lonoke District										
1 to 10.....	212	212	424	0	0	0	0	0	0	0	0	0	0	0.0
11 to 15.....	216	216	432	0	1	1	1	0	1	0	0	0	2	0.4
15 and over	513	596	1,109	1	3	4	2	2	4	0	0	0	8	0.7
	941	1,021	1,965	1	4	5	3	2	5	0	0	0	10	0.5
				Louisiana, April, Gueydan District										
1 to 10.....	31	22	53	0	1	1	0	0	0	0	0	0	1	1.8
11 to 15.....	33	15	48	2	0	2	0	0	0	0	0	0	2	4.1
15 and over	257	59	316	2	0	2	0	0	0	0	0	0	2	0.6
	321	96	417	4	1	5	0	0	0	0	0	0	5	1.1
				Arkansas, May, Lonoke District										
1 to 10.....	254	219	473	4	3	7	1	0	1	1	0	1	9	1.9
11 to 15.....	77	111	193	3	2	5	0	1	1	0	0	0	6	3.1
15 and over	782	716	1,498	8	3	11	8	1	9	0	0	0	20	1.3
	1,113	1,019	2,162	15	8	23	10	1	11	1	0	1	35	1.6

of Lonoke on three sides, several being within the corporate limits.

MALARIA ENDEMICITY

The history of chills and fever for the previous summer gave a malaria incidence index which affords probable important data for the extracantonment zone, Eberts Field, and offers an interesting parallel to similar observations and the data obtained in the rice fields of Louisiana. The total incidence of malaria from history alone in the combined rural and town population in both the Louisiana and Arkansas districts is, curiously, the same, approximately 29 per cent. A slide endemic index (thick smears) taken in January, April and May gave remarkably low percentage results, as shown in the accompanying table.

Technic of Staining.—1. To 100 c.c. of ethyl alcohol, 1.3 c.c. of hydrochloric acid are added. The slides are placed in this solution for three or four hours, that is, until they become a ground glass color. They are rinsed in running water for five minutes. The time in acid is relatively dependent on the age of the blood smear.

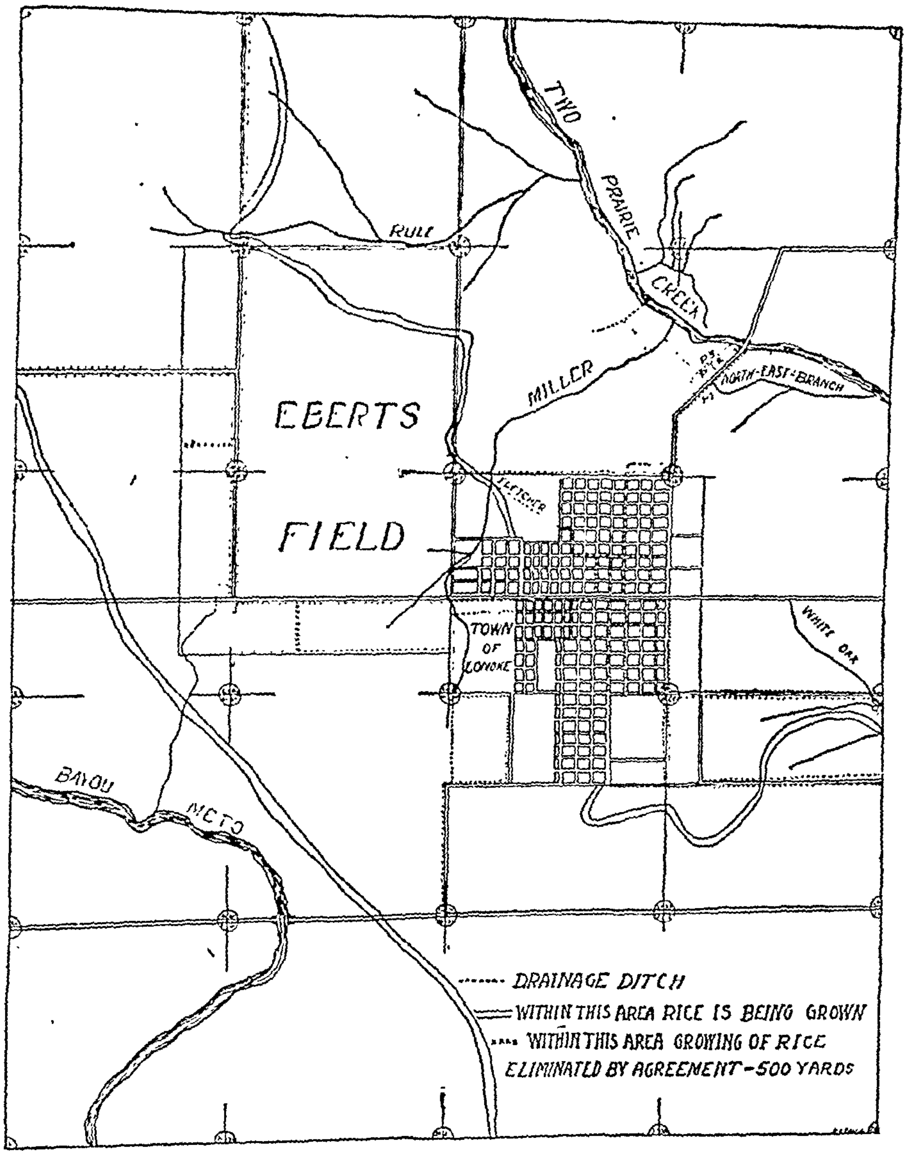
2. (*a*) To 100 c.c. of distilled water, 3 c.c. of 1 per cent. polychromethylene blue solution are added. The slides are placed in this solution for four minutes and then rinsed in running water for one minute.

(*b*) To 100 c.c. of distilled water, 2.6 c.c. of 3 per cent. eosin solution are added. The slides are placed in this for one minute, and then rinsed in running water for one minute.

(*c*) The slides are dipped in the polychromethylene blue solution for one minute, and then rinsed in running water for one minute, dried and examined.

Meyer[1] reports almost a negative endemic index taken in the spring months in California. Kelly and Geiger,[2] working practically in the same district but in September, report an index of 4.7. When one considers the number of persons in the rice districts under our investigation giving a history of chills and fever for the previous summer and the small number proved positive on microscopic examination (thick smears), then one can assume that there are several factors to be considered:

1. In an endemic index taken in the spring months, the number of carriers discovered will probably be small. An endemic index varying so much at different seasons is not indicative of true malaria conditions and never should be judged accordingly. Nevertheless, the discovery of carriers, though small, is evidently a potent factor in the malaria rate for the coming summer. This is borne out by the fact that up to Sept. 1, 1918, no new cases of malaria have been reported in the extracantonment zone, Eberts Field. Therefore the value of an endemic index is obviously limited to a human control measure in this investigation.



Extracantonment zone, Eberts Field.

2. A history incidence index for the previous summer is not reliable if the microscopic index (thick smears) is to be taken as indicative of true malaria conditions, though several factors may influence the results, namely, the use of quinin as a preventive for common colds in winter and the constant use of chill tonics through the winter months, which is true of the Lonoke district from daily observations of druggist sales since Jan. 1, 1918.

3. The large number of patients having malaria, as judged by the history incidence index, were completely cured of the disease by attending physicians. We know this not to be true, the diagnosis never being checked microscopically or the case followed to completion.

4. Temperature and season evidently have an effect on the malaria carrier rate.

The different results in the January and May indexes on the same persons illustrate the intermittence of the malaria carrier along with the seasonal variance even when we consider the possibility of our missing the plasmodia on examination. This point is forcibly brought out by the fact that three schoolchildren whose blood was found negative in both indexes were proved positive carriers after having taken their initial dose of typhoid vaccine, the chill and rise in temperature almost immediately following. Two boys, aged 8 and 10 years, respectively, who gave a history of chills and fever for three previous summers with a gradual cessation of active symptoms and whose blood smear was negative in the January index, were proved positive in the May index. Their blood examined daily for one month, no quinin being given, gave in one only two additional positive results and three in the other. The plasmodia in both instances could be considered very resistant to the stain.

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[1] Meyer, K. F.: Sources of Malaria in California, Tr. Commonwealth Club of California, San Francisco, 1916, **2**, 22.

[2] Kelly, F. L., and Geiger, J. C.: Endemic Index of Malaria in the Northern Sacramento Valley, California, The Journal A. M. A., May 5, 1917, p. 1319.

Since this investigation started, there have been reported by physicians for Lonoke County 642 cases of malaria with one death. No reports are available or reliable for the previous years, and this number is probably indicative of true conditions. For instance, in the same period in the past year seventeen deaths (eighteen for the entire year) were reported as being due to malaria. The mosquito control, though perfect since March, 1918, in three other areas in Lonoke County and partially so in the extracantonment zone because of rice fields, cannot be considered a factor in reducing the number of deaths because of its own obvious limitations to small areas, even though these are centers of population. The immediate and only cause in the reduction of deaths from malaria is probably a better and more complete diagnosis of the patient's illness by the physician, the intensive educational campaign carried on here having its maximum effect.

MOSQUITO OBSERVATIONS

For purpose of comparison, the following observations made in Louisiana in the Gueydan District in 1917 are given:

Observations were begun, June 1. On large rice fields, ten days after irrigation, mosquitoes were breeding in public health quantities.

Successive catches in June showed only *Anopheles crucians* and *A. punctipennis,* the former about twice as abundant as the latter. *A. quadrimaculatus* was first found in the latter part of June, and by July 10 had superseded all others. These observations as to breeding were checked by catches of imagos in nearby barns. During the latter part of June and the first of July, salt water entered the Louisiana canals. In a field containing this water, showing from 12 to 23 grains of salt per gallon, *A. crucians* was the only anophelene present.

EXTRACANTONMENT ZONE, ARKANSAS

Ditching and oiling had established practically a perfect control of mosquito breeding early in March. This control was maintained continuously in the extracantonment zone. The observations by months may be thus summarized:

February—*A. punctipennis* was observed biting, February 26, in Lonoke and in the aviation field. Two females and three males were captured. No breeding was found.

March.—No breeding of *Anopheles* was found; no imagos were seen.

April.—Two imagos of *A. quadrimaculatus* were caught in town, April 17-20. *A. crucians* was breeding in rain barrels outside of town.

May.—There was a small amount of breeding (chiefly *A. quadrimaculatus*) in ditches. One imago was captured in a house. There was breeding of *A. quadrimaculatus* in moderate abundance outside the extracantonment zone.

June.—June 5-8, *A. quadrimaculatus* was breeding in moderate abundance in the rice fields about 1 mile from town. Imagos were abundant in nearby barns and were found biting in town, June 8-12. June 20, *A. quadrimaculatus* was again breeding in the same rice fields, and imagos again were numerous in nearby barns and found biting in town a few days later. One *A. punctipennis* was caught in town, June 25.

The early appearance of *A. punctipennis* (February 26) may be due to hibernation (1) of adults, (2) of larvae or pupae, or (3) from eggs laid early. It is worth while to note that temperatures were relatively high in the second week of February, the "mean" temperature varying from 48 to 66 F.; then colder for the third week (means, 26 to 54), and warmer again in the third week, when the mean temperature varied from 40 to 66, the highest single reading being 87 F., February 25.

A. quadrimaculatus has been the only anophelene found in public health quantities. Rice fields situated 1 mile from Lonoke and a greater distance from the aviation field were the only places within and over reasonable flight distance where breeding could be found at certain intervals. Several days following these observations large numbers of imagos were caught in nearby barns where none could be found previously, and simultaneous catches were made in houses in town and in the aviation field. Therefore the obvious maximal flight distance judged by these concomitant catches was more than a mile.

It is interesting to note that when water became "dead" on rice fields, through partial draining, or by stopping of pumps, *A. quadrimaculatus* was apparently superseded entirely by culex forms, though only an occasional culex could be found on this field when *A. quadrimaculatus* was abundant. Up to Sept. 1, 1918, no infected mosquitoes were found, though many were dissected.

Samples of wet mud from puddles and rice fields recently drained were examined for surviving larvae and pupae. The results were negative. In drained rice fields and puddles, water was found to remain in deep crayfish holes. These were pumped and examined for larvae. Five such samples were negative, and two contained numerous culex larvae.

CONCLUSIONS

1. The control of the human carrier plus the factor of good screening have, so far, made negligible the malaria incidence in a typical rice district. As it is not yet humanly possible to obtain absolute mosquito control in the rice fields, these measures are indispensable.

2. The persistent breeding of *Anopheles quadrimaculatus* in the rice fields and the repeatedly recorded "obvious flight distance" of this mosquito of more than a mile emphasize the necessity of the foregoing measures. The observation that culex superseded anophelenes in "dead" water in the rice fields deserves further study.

3. The positive indications of breeding in crayfish holes, which abound everywhere, is suggestive enough to offer a simple solution to the sudden appearance of large larvae or pupae in puddles after rains, which before were dry.

4. The history incidence index in two widely separated rice districts is the same. The incidence, though less than one would expect, is probably representative. The average incidence in schoolchildren taken as a unit invariably equaled that of the community as a whole, indicating strongly their availability for experimental index work and the obtaining of data.

DISINFECTION OF THE KNEE JOINT*

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Whether in civil or military practice, it is generally conceded that septic infection of the knee joint is one of the most serious conditions that the surgeon can be called on to treat, endangering, as it does, both the future usefulness of the joint, and at times, the very life of the individual.

In civil experience we have formerly been led to a profound distrust of the ability of this particular articulation to deal with infective processes. In septic arthritis, an arthrotomy was usually advised and drainage tubes or wicks were inserted into the joint cavity, or through and through drainage was established and the tubes allowed to remain for at least a number of days. Besides producing an evil mechanical effect on the synovia and cartilages, the drainage material provided an ideal reservoir for the pabulum in which the organisms could multiply and travel from within outward, spreading infection to the para-articular structures, or from without inward, carrying secondary infection from the skin into the joint cavity.

The anatomic structure of the knee joint is such that when it is severely infected over its whole extent, drainage becomes a serious and difficult matter, and even though skilfully done, it is a most unsatisfactory procedure, often resulting in the tracking of the infection along the muscular and fascial planes, above or below the joint, with the accompanying dangers of septicopyemia and severe damage to the joint structures, resulting in ankylosis.

CONDITIONS NECESSARY FOR FAVORABLE RESULTS

The results achieved in the present war, in treating infected wounds of the knee by disinfection and immediate closure, have been the source of much surprise and satisfaction. Favorable results, however, with restoration of joint function, seem to depend on the observance of certain principles which are doubtless of equal importance in treating septic arthritis of autogenous origin:

1. The operation must be done early, before the spread of infection and the disorganization of the joint structures have had time to occur.
2. Thorough lavage of the infected and contaminated areas, followed by primary closure of the joint capsule, is essential.
3. Foreign bodies must not be allowed to remain within the joint cavity.
4. When drainage is used at all, it should be carried down to the capsule but not into the joint cavity.
5. Immobilization of the joint must be secured by adequate mechanical fixation.

In order for a surgeon to carry out these principles effectually, it is of the utmost importance that a diagnosis of suppurative arthritis be made early in the course of infection. This is not often difficult, since the joint involvement usually accompanies or follows a focal or general infection, originating elsewhere in the body, such as, gonorrhea, tonsillitis, otitis media, scarlet fever, pneumonia, etc.

This form of arthritis may be secondary to a serous synovitis or it may start without any obvious serous stage. The septic joint is often ushered in with a chill, the temperature is elevated, the capsule becomes distended with fluid, and the joint is inflamed and painful and is held in a semiflexed position by the spasmodically contracted muscles.

Every joint that shows evidence of inflammation and effusion, during the course of a focal or general infection or following it should be aspirated under strictly aseptic precautions for diagnostic purposes. The nature of the aspirated fluid will be a very definite guide as to the proper course to pursue.

The bacteriologic side of the investigation so often fails to reveal the presence of micro-organisms in the joint fluid, either in smears or cultures, that considered by itself, it carries little weight, and negative findings in this regard should not influence the course of our treatment.

The cytologic investigation of the joint fluid, however, is a distinct aid to the diagnosis, and at times will materially influence the prognosis, in joint effusions. A high percentage of polymorphonuclear leukocytes found in a sample of the aspirated fluid will afford positive evidence of a septic condition. The normal synovial fluid from the knee joint is acellular. Pus, which consists of practically 100 per cent. polymorphonuclear leukocytes, is a surgically visible sign that infection of the part has occurred and calls for prompt surgical intervention.

TECHNIC OF DISINFECTION

The technic which I have followed in disinfecting the knee joint is briefly as follows:

The knee is prepared the day previous to operation by being shaved and scrubbed and wrapped in sterile dressings. After the patient is anesthetized, the field of operation is further sterilized with benzin and iodin. An incision 1½ or 2 inches long is made parallel to the inner or outer border of the patella, extending into the joint cavity. If found desirable this incision may be extended to facilitate a more complete exploration of the joint. By means of a gravity syringe, placed high enough to give the stream considerable pressure, the joint cavity is now thoroughly flushed for fifteen or twenty minutes. Instead of using the sterile glass tip, commonly attached to the tubing leading from the container, it is better for the operator to use a soft rubber tip which may be inserted into the various recesses of the joint without the danger of injuring their delicate lining.

Various solutions have been used with success for disinfection of septic joints. Some operators even assert that the results do not depend on the nature of the solution employed, but rather that it is the thorough mechanical cleansing which is the important factor. However, since it has been shown that the synovia and cartilage withstand very well the active disinfecting agents, and since the pathogenic organisms are harbored within the synovia and para-articular tissues, and not in the joint cavity, I prefer to use an active disinfectant which possesses a penetrating as well as a cleansing action. Mercuric chlorid, 1:15,000, in salt solution, as suggested by Dr. Cotton of Boston, maintained at a temperature of about 115 F. and this followed by physiologic sodium chlorid solution, has proved very satisfactory.

Since the capacity of the synovial cavity of the knee joint reaches its maximum when the leg is flexed to an angle of about 25 degrees, and since the contents of some of the bursae communicating with the joint are most easily emptied when the limb is in a semiflexed position, it is very important that flexion and extension of the joint should be passively carried out while the cavity is being flushed. This will aid materially in ridding the joint of the necrotic material and pus that have accumulated in these various pouches. It is also advisable repeatedly to press the edges of the wound close about the tip of the syringe in order that the fluid may distend the joint capsule and penetrate and flush out its various recesses.

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* Read before the Section on Orthopedic Surgery at the Sixty-Ninth Annual Session of the American Medical Association, Chicago, June, 1918.

The objects sought by arthrotomy and irrigation of the joint cavity are:

1. Relief of the intra-articular tension, which doubtless has a deleterious effect on the synovial membrane and cartilages through its interference with the circulation and the normal secretory function of the synovia.
2. The removal of the necrotic material which acts as a culture medium within the joint cavity. The nature of this material precludes its removal by means of the trocar or an aspirating syringe.
3. The cleansing and disinfecting action on the synovia, which aids it materially in regaining a normal function and renewing its fight against infection. The synovial membrane, like other serous membranes, has an enormous capacity for combating infection if it is in a fairly normal condition.

After disinfection, the capsule is closed with catgut sutures, and if a drain is used at all, it is placed outside the synovial membrane for the sole purpose of taking care of the extracapsular infection. The wound is closed in layers and the joint is thoroughly immobilized, preferably by a plaster-of-Paris spica including the foot.

A fenestra may be cut over the knee and if an increase in the inflammation and effusion should occur, aspiration may be repeated, depending on the nature of the fluid as to the future course of procedure. It is not frequent, however, that any further difficulty is encountered. The temperature and pain usually subside within a few days, and the joint gradually resumes a normal condition.

POSTOPERATIVE MEASURES

The limb is maintained in a position of physiologic rest until the wound is entirely healed and all signs of inflammation have disappeared. The patient is then given the privilege of active motion once or twice a day, depending on the sense of pain as a guide to the extent of movement. Later, gentle passive motion, along with heat and massage, will often hasten recovery, but at first the utmost gentleness is necessary in order to minimize the risk of exciting a recrudescence. The absence of signs of inflammation does not always assure the absence of pathogenic organisms, and well meant efforts to establish mobility may set up an active condition within the joint, if passive motion is applied too vigorously or begun too soon.

Should fibrous adhesions form, which we feel reasonably sure are periarticular, they may be broken down by forced manipulations, with the patient under full anesthesia, in order to secure complete muscular relaxation, thus permitting the movements to be carried sufficiently far in all directions.

Intra-articular adhesions are best treated by gradual correction by means of suitable mechanical appliance, since rough handling is followed by further damage to the joint structures and still greater limitation of movement within the articulation.

ABSTRACT OF DISCUSSION

Dr. Charles A. Parker, Chicago: The extremely important point of the paper is that immobilization of a joint is the greatest factor in the saving of mobility. In four or five years' experience in the Cook County Hospital I have never opened a knee joint for sepsis, and I think I have never punctured one. The intern sometimes does that for me, before I know it, and gets information, more or less complete. The fluid is usually sterile, as Dr. Cofield stated. During that time we never had a patient die from knee infection or the knee infection get worse. We have had bad knees, of course—tuberculous in type, or otherwise; but that does not mean that a septic knee should not be opened sometimes.

In regard to washing out the joint, I have had no experience with it. Any antiseptic is out of place in a joint. As to any antiseptic entering living membrane and killing bacteria between live cells and getting out again, leaving the bacteria dead and the cells alive, that would be a new and interesting experience.

Dr. John P. Lord, Omaha: There are infections and infections of the knee. The milder infections can be treated in various simple ways; but the more extreme and more malignant infections are very grave propositions. Unfortunately, we often see these cases after very destructive changes have taken place. Of course, it is our desire always to see them sooner, before irreparable damage has been done.

I wish to commend this paper. I think it is very safe to follow. Unfortunately, these conditions are too often attacked in a sort of by-guess and by-gosh fashion. Dr. Cofield has made a very valuable contribution to this subject, and dealt with it very rationally. His method of leaving the joint without foreign material in it is very important. I have felt that there is some advantage in a weak antisepsis. Perhaps the mechanical cleansing, the irrigation and relief of tension is the chief factor. It seems to me that we might learn something, also, from the recent technic of delayed primary sutures. I understood him to say that if we leave a vent, but not a drainage tube or gauze, merely leaving it sufficiently patulous for a suture, that will perhaps prevent the necessity of resorting to drainage. I think that this technic is too often neglected. We frequently leave the case with uphill drainage. If we have opened on the front, it is only reasonable that we turn the patient on his face and get the advantage of gravity. In the cases reported by Dr. Cofield, there may have been a large number of rather innocuous types of mild infection, which would go through their course without severe infection in any event. It requires a nicety in discrimination to determine whether more radical procedures may be necessary; but it seems to me that if we adopt the principles laid down by Dr. Cofield, and possibly supplement them, that it may be of advantage and we may save function in cases in which we have hitherto had a considerable number of stiff knees.

Dr. Albert H. Freiberg, Cincinnati: Perhaps, because so many knee joint infections are caused by gonorrhea, I am reminded of the opening sentence in Ricord's book on gonorrhea, written many years ago. He started his book in true dramatic French fashion by saying, "A gonorrhea begins; God only knows when it will end!" The same thing is true of joint infections, in a way. So many of them start in a quiet, harmless sort of fashion; but no one knows in the beginning where they are going to end. No one knows how far the vital structures of the joint are going to be damaged, or how serious the infection is going to prove. Of course, the very beginning is the time when surgical intervention can accomplish most for the patient. Over fifty years ago, in the absence of bacteriologic assistance, Volkmann described several types of joint infection, which he classified, according to the knowledge of the day, as catarrhal, suppurative and phlegmonous arthritis. A catarrhal arthritis was one that subsided without any intervention except rest. If the joint fluid were removed it was slightly turbid, but more or less serous in character. There were all gradations, from this to the frankly purulent material, which, of course, constituted the suppurative arthritis. Then there were cases in which not only was there pus in the joint, but which were characterized by the very early destruction of the vital joint structures, particularly the cartilage; and these were the ones in which there was definite sepsis and true ankylosis afterward. Now Dr. Cofield's experiences are shared by me. We have both done the same kind of thing, and I think that he agrees with me that not every joint infection can be successfully treated by this method; but we both feel that we have rescued joints from serious and perhaps permanent damage by early intervention of this kind, on the one hand, and, on the other, if a joint by reason of the seriousness of the infection is destined without surgical intervention to be crippled, we feel that the effort to clear the joint of this material does not in any way make the patient's chances for complete recovery worse. Dr. Cotton has shown that joints are more tolerant of infectious processes than we used to believe, and that it is possible for a joint, if given a chance, to overcome grades of infection which we formerly regarded as practically fatal, so far as future usefulness was concerned. But it seems to me that there is a suggestiveness in this effort to save joints in this way which may be of great use in future work; it opens a field for the investigation of the character of the infections, so that if this work is pursued faithfully and with some system, we may before long be able to say, by obtaining fluid, which joints we are going to be able to save by surgical intervention, and in which joints there is no likelihood of this; in which joints it is unnecessary to attack surgically, and in which it is necessary. This is the most important aspect of the work which Dr. Cofield has reported this morning.

Dr. Robert B. Cofield, Cincinnati: I did not want to take the time of this section to go into a detailed case report. Our cases have not been numerous. We probably have had only eight or ten knee joint infections in the last two years in which we felt justified in applying this technic. The important factor is to be able to judge which joint justifies this operation and which will get well with immobilization and treatment. I do believe that in practically all joints that show inflammation and effusion we are justified in aspirating the fluid. It can be done with very little pain to the patient. I have never seen an infection or an increase in inflammation resulting from it if it is done under strict aseptic precautions, and, while the fluid rarely shows any bacterial growth, nor are bacteria visible in the smear, we can tell by the nature of the fluid, the cell count, the great number of polynuclear leukocytes, whether it is a septic joint or not. I think that in all of those cases that show a great increase of polynuclear leukocytes we are justified in opening the joint and following the technic the paper describes. I do not think that we should feel that we should not interfere, because the patient is not going to die from his joint infection. What the patient wants, and what we want, is a good, movable joint. If the inflammation is allowed to go on, the synovia soon suffers, the cartilage degenerates and breaks down and we have a joint that may result in more or less complete ankylosis; therefore, we should not wait until the roentgenogram shows positive changes. It is too late then to expect to get a perfect result. The operation must be done early. It is unfortunate that a great many of the cases we see in the public or general hospital come after there has been destruction of joint structures sufficient to make it impossible to get complete mobilization of the joint afterward. In private practice I have been more fortunate. I have had quite a number of cases showing purulent infection that recovered complete motion in the few months following operation.

As to using an antiseptic in a joint, our experience has not shown that a weak antiseptic, such as I described, is deleterious to the joint structure. Whether it is efficacious or not I am not able to say. As I stated, I prefer to use weak bichlorid, followed by saline, because we have obtained good results from it. In one case of prolonged infection in a child I used ether as advocated by some of the surgeons abroad, and in that case I had the joint open up and discharge pus for a short time, and the result was not so good as in the cases in which I used flushing with weak bichlorid solution. Of course, one case does not prove anything, and this case might not have done so well under the other technic.

As to draining these cases extracapsularly, I think that this will depend a good deal on our judgment as to the invasion of the infection into the periarticular structures. It does not do any harm to put a little silk worm drain or rubber tissue drain in—not into the joint cavity, but into the periarticular structures—and remove it on the third day. This leaves a vent; and if purulent infection is bound to discharge, it will have a free passageway. As Dr. Lord has suggested, in those cases that come to drainage, they should, of course, be placed in the most favorable position.

ORTHOPEDIC OPERATIONS ON THE HAND *

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Unusual as the opportunities are for reconstruction work on the upper extremity, they are counterbalanced by an adequate amount of technical difficulties. To overcome these, investigation, into numerous questions of a theoretical as well as a technical nature becomes necessary.

Some detail work has been devoted to the solution of surgical problems; much less attention has been given to the study of the principles of a mechanical or a physiologic nature. Yet it would seem that mechanical and physiologic analysis is as essential for systematic progress in this field as it is in other fields of surgery.

Conditions existing in the wrist and hand compare favorably with those of the foot and ankle for several reasons: The muscle supply is more abundant; there is, as shall be shown presently, a greater possibility of detaching muscles of the hand and forearm for the purpose of transplantation, by virtue of certain anatomic peculiarities of the tendons; there is also the absence of the influence of gravity and weight bearing; and there are unusual possibilities of improving function by way of muscle reeducation.

I have been attracted to reconstruction work on hands in different orthopedic conditions, for the last two years. A point that struck me early in the work was the necessity of ascertaining and recognizing certain mechanical and dynamic conditions governing the function of the hand and the fingers.

PROBLEM 1. THE POSITION OF DORSAL FLEXION OF THE WRIST

Robert Jones considers this position as a surgical axiom and adds that all injuries of the wrist should be treated in dorsal flexion. The grip of the fingers is diminished if the wrist turns into palmar flexion. We find this point thoroughly substantiated by theoretical considerations as well as by experimental studies. With the wrist in hyperextension, the tonus of the flexor muscles is such that the greatest amount of muscle power can be displayed per unit of contraction. As the wrist goes into the flexion position, the gripping power of the fingers gradually decreases, owing to the gradual loss of tension of the flexors. With the wrist in full flexion and the fingers extended, I have found, as reported on another occasion, that fully three fourths of the potential contractile power of the finger flexors has been exhausted.

It is equally essential and necessary that the wrist joint, once brought into hyperextension, should be

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* Read before the Section on Orthopedic Surgery at the Sixty-Ninth Annual Session of the American Medical Association, Chicago, June, 1918.

* Owing to lack of space, this article is abbreviated in The Journal by the omission of eight case reports and the illustrations. It will appear in full in the *Transactions* of the section and in the author's reprints.

held there rigidly so as to provide a firm stabilizing position.

As we turn to the anatomic study of the musculature of the wrist, we recognize the latter to be especially designed for this purpose. There are two flexors of the wrist, the flexor carpi ulnaris and radialis; there are three extensors of the wrist: the two extensors carpi radiales and the extensor carpi ulnaris. In addition to this the extensor pollicis and indicis proprius act as accessory extensors of the wrist by virtue of their connection with the second metacarpal.

According to Frohse and Frankel, the volumetric total strength of the extensors of the wrist bears to that of the flexors of the wrist the ratio of 2:1, there being not only a numerical but also a great dynamic preponderance of the extensors over the flexors.

This fact admits of only one interpretation: There exists, first of all, a very considerable amount of muscle power for the purpose of stabilizing the wrist joint by concerted muscle action before the gripping power of the fingers can be displayed to the best advantage. The muscle being unevenly distributed about the wrist, it is obvious that in concerted action equilibrium is obtained only when the power of contraction in the weaker group—the flexors—is increased by hyperextension, and in the stronger group—the extensors of the wrist—is decreased by contraction, so that, in this state of tension the dynamic values of both groups become more equal. And not only is it necessary to carry the wrist into this position of hyperextension, but also one must take care that this position be maintained firmly and with considerable stability, either by muscle action or otherwise.

I have been guided by these considerations when attempting the repair of deformed hands or contracted hands. Clearly the best solution would be if the wrist, after the contraction had been released, could be endowed with sufficient muscle power to be held actively in the desired position. In regard to the transference of power, the muscles of the hand have this decided advantage over some muscles of the foot, that they are not so much bound down by mesotendinous attachments and therefore permit freer exchange and larger displacement. This is true especially of the extensor group, but also of the flexor carpi ulnaris and to some extent of the flexor carpi radialis.

I have no doubt that many cases of flexion contraction or drop hand will lend themselves to the application of tendon transference with favorable result. Such transplantation should be carried out for the benefit of extension power of the wrist in the first place, and the tendons should be anchored accordingly. It is hard to see how a direct transference of muscle power from a flexor muscle to the paralyzed extensors of the fingers can do any practical good unless the extension of the wrist itself is taken care of first.

In many more cases, however, I believe that the muscle power available for transplantation is not sufficient to secure a stabilization of the wrist in the extension position. The situation parallels very much the one in the paralyzed ankle. Here, too, the first mandate of proper function is stabilization, and it is generally found that much better results are obtained by complete stabilization of the ankle than by incomplete and insufficient transference of muscle power. The same principle is applicable to the wrist for the reason that complete stabilization of the wrist in the desired position, even at the exclusion of any motion, is preferable to incomplete motility.

Following are a number of cases in which incomplete motion of the wrist was sacrificed in order to obtain complete stabilization in correct position (five cases).

Case 1.—H. W., man, aged 25, admitted, Jan. 3, 1918, had traumatic paralysis of the musculospiral nerve following a compound fracture of the humerus, seven years before. Contracted drop hand with shrinkage of the extensor muscles of the wrist. Owing to the length of time elapsed and the total waste of muscles involved, no nerve repair work was attempted. Correction of the drop hand was carried out by arthrodesis of the wrist in hyperextension. Following this a tendon transplantation was done. The flexor carpi radialis was turned outward around the radius and united to the extensor carpi radialis longior and brevior. The flexor carpi ulnaris was carried through the interosseous membrane between the radius and ulna and united to the tendon of the common extensors of the fingers. Five weeks after operation, the wrist was rigid in hyperextension. The grip of the fingers was good and improving daily under after-treatment. The transplantation of the flexor carpi ulnaris to the extensor of the fingers secured a fair amount of active extension of the fingers, sufficient for the opening of the fingers.

PROBLEM 2. HYPEREXTENSION CONTRACTION OF THE METACARPOPHALANGEAL JOINT

Extreme flexion of the wrist greatly enhances the occurrence of claw hand deformity. It increases the tension in the extensor muscles and, with the wrist and knuckles as fixed points, the full extensor action is brought forth to produce and to maintain hyperextension in the metacarpophalangeal joints. This position is very difficult to overcome for the finger flexors and lumbricales, as can readily be seen in deformities of Volkmann's ischemic contracture (two cases).

The difficulty of overcoming the hyperextension of the metacarpophalangeal joint is demonstrated by the following case:

Case 7.—F. A., woman, aged 25, admitted, July 27, 1917, had had the forearm severely lacerated up to the elbow by getting it caught in a steam roller, six months previous to admission. At the time of admission the hand was bound down in flexion by tendon contracture. The metacarpal joint was in strong hyperextension. There was flexion of the middle and end phalanges and pronation. July 28, 1917, plastic lengthening of the flexor muscles of the wrist and fingers was performed. Complete extension of the wrist and complete extension of the fingers was obtained after this operation, but the hyperextension in the metacarpophalangeal joint was not improved. For the relief of the latter condition two further operations were performed, both intending to relieve the contraction of the finger extensors over the joint by tendon lengthening. But the extensor muscles of the fingers were found transformed into a mass of scar tissue in which the individual tendon could not be differentiated. Finally, as both attempts failed to release the contracted joint, the plan of Dr. R. Meisenbach for a similar condition in claw foot was adopted. A longitudinal incision was made over the dorsum of the first, second and third metacarpals, and an osteotomy was performed, about one-half inch proximal to the joint. The fingers were then bent down forcibly, allowing the fragments to kink. In this way a better closure of the fingers was obtained, although the metacarpophalangeal joints themselves remain unchanged. The result of this operation has been much more satisfactory.

PROBLEM 3. RECONSTRUCTION WORK OF THE THUMB

Reconstruction work of the thumb was carried out for the relief of (1) inability of opposition of the thumb, and (2) inability of extension of the thumb. In the first instance the gripping power of the hand is greatly impaired, as the thumb cannot be used to oppose the fingers, while in the second instance the gripping power of the hand is also impaired by the fact that in closing the hand the thumb is thrown under the fingers, preventing the hand from taking hold of any object (six cases).

CORRECTION OF INABILITY TO EXTEND THE THUMB

Case 10.—A. R., boy, aged 12, admitted, Jan. 18, 1917, had spastic paralysis. The hand was only slightly paralyzed, with the exception of the extensors of the thumb. The thumb was drawn under the fingers each time the patient closed his hand. Feb. 12, 1918, after the technic given by Biesalski and Mayer, an incision was made over the extensor indicis proprius of the right hand. The tendon was split at the metacarpophalangeal joint, brought out through a second incision over the long extensors of the thumb, and then fastened to the tendon of the long extensor of the thumb. After the operation the patient ceased to turn the thumb under in closing the hand, and opposition of the thumb and fingers was thereby secured.

PLASTIC SUBSTITUTION OF RUDIMENTARY THUMB

Plastic substitution of the missing thumb was carried out first by Nicoladoni, who reported two cases in 1900 and 1903. Later Schepelman, Horhammer and others reported on cases of this kind. Nicoladoni's autoplastic substitution was carried out in two step operations, the second toe of the same side being used for the substitution of the missing thumb.

Case 14.—R. G., boy admitted, Nov. 14, 1917, with a club hand deformity. Acording to the statement of the mother, there was an infection of the hand very early in life, followed by almost complete loss of the thumb and destruction of the distal end of the radius. On admission there was found on the radial side of the wrist a scar, to which a very rudimentary thumb, not more than one-half inch long, was drawn laterally and backward. The muscles of the thenar were preserved. The club hand deformity was corrected, Dec. 6, 1917, by resection of a piece of the ulna.

The first step of the plastic substitution of the thumb was carried out, March 5, 1918, as follows (Dr. Charles J. Rowan, assisting): A flap was prepared by a dorsal curved incision, from the dorsal surface of the thenar and the adjacent side of the wrist. Then the stump of the metacarpal bone was dissected, and the end refreshened and anchored by catgut sutures. A U shaped flap was then prepared over the seventh rib of the left side of the chest, with lateral base. Under this flap 1 inch of the rib was resected. As it was impossible to keep the rib in connection with the flap, it was removed and immediately fastened to the stump of the first metacarpal by heavy double catgut sutures. The thumb was then pulled over toward the chest, and the skin under the flap was drawn together and sewed. The flap of the chest was pulled over so as to cover the flap made from the dorsal surface of the thenar, with the implanted piece of the rib between the two flaps.

Twenty-three days later the second step of the operation was performed, by severing the flap from its base on the chest and trimming the tip of the new formed thumb.

The patient is now able to close his thumb against the tip of the fingers and to take hold of light objects.

MUSCLE EDUCATION

From the beginning of the work of reconstruction of the upper extremity, great stress was laid on the mechanical and muscle educational side of the aftertreatment. It is of considerable advantage in working on the upper extremity that there is no weight bearing and gravity to reckon with, and that the extremity can be readily protected against any undue influences of mechanical character. In every case the medicomechanical and later the reeducational treatment was added to the surgical corrective treatment, the work beginning from one to three weeks after operation.

Following the conclusion of medicomechanical treatment, the patient enters immediately on the muscle educational work. The nurse is instructed in regard to the needs of the individual case. The work is done in groups of five or six and sometimes more, but each patient does individual work and has individual attention. No special attention is paid to the product itself which is turned out by the individual child. The children are to be taught to use their hands in a certain way most favorable to the development of power and coordination of the muscles in question.

The work begins by molding in clay, for which common plasticine is used. This has proved especially useful for those patients who need thumb practice, as the molding requires quite a little muscular strength. I believe this to be by far the most useful part of muscle educational training because the movements required are simple and more or less elementary: kneading, twisting, pressing, etc. Children with more advanced functional ability of the hand are then given instruction in raffia work, which is especially beneficial for the more coordinate movements of the wrist and hand.

Weaving, even if the pattern is very simple, requires more skilful use of the hand, and naturally only a few of the children mentioned here are capable of carrying on this kind of work. Aside from these three essential instructions, the children are given all the encouragement in the use of such playthings as might help to develop the muscles of the hand, such as blocks and puzzle pictures.

All the patients mentioned have taken part in muscle educational work and have derived considerable benefit from it.

ABSTRACT OF DISCUSSION

Dr. John L. Porter, Chicago: Dr. Steindler's work is of inestimable value as illustrating what can be accomplished by a conjunction of correct mechanical principles and good surgery. I believe that we have been deterred from what, in the way of plastic surgery, might be very beneficial, because we have overestimated the anatomic difficulties and have decidedly underestimated the great many mechanical advantages to be secured. In one case I had great difficulty in preventing adhesions of the tendons, especially on the flexor surface of the wrist. I believe that adhesion occurred in this case because so many tendons are massed in so small an area, with very thin layers of tissue separating them. That is but one feature that prevents successful plastic work on flexor tendons. Our knowledge of this kind of surgery, and especially of the arm and wrist, will increase wonderfully from now on because the war is going to bring to our attention a lot more disabilities of the upper extremities from injury of nerves and muscles than we have seen before. Perhaps we have been deterred from doing what we could for paralytic conditions because they were paralytic; but when the cases are traumatic, we think that something must be done to insure return of the use of the hand, arm and wrist.

Dr. John P. Lord, Omaha: I believe that Dr. Whitman was entirely right in his conception of the principle of arthrodesis for stabilizing the ankle joint, and thus rendering more efficient any tendon transferences in cases of flail joint. It has seemed to me that this principle applied to the wrist would save us much of the more complicated and difficult part of this reconstruction of the structures about this joint. I have had considerable experience in resections of the wrist joint, and arthrodesis of that joint, done primarily to enable me to get better functional results after work on the tendons. It has also enabled me to lessen the spasms, which are attended with certain disadvantages. In Volkmann's ischemic paralysis I have on several occasions shortened the radius and ulna. I can testify to the efficiency of that method and its advantage. I can testify to the difficulties of plastic operations on tendons about the wrist, which cases furnish many complications. I think that if we would give more attention to the correct position, by operation on the bones and joints, and secure an arthrodesis in certain of these cases, we could then, by palliative methods, after a long period, secure results that might be superior to those obtained by the more extensive complicated operations on the tendons. It has been my experience that these operations about the thumb for the transference of tendon and muscle function have been very satisfactory. They lend themselves very well to the particular deformities of the thumb resulting from paralysis, more especially as it is sometimes necessary to rotate the bone after osteotomy. I found that I could get much better mechanical position by rotating the bone so that I could get a better application of muscle power.

Dr. Melvin S. Henderson, Rochester, Minn.: In wrist drop due to paralysis of the musculo-spiral nerve, nerve regeneration by operation has been attempted. I recently had an opportunity of visiting the Military Orthopaedic Hospital at Toronto, which harbors 750 patients, wounded Canadian soldiers. They told me that operations for severance of the musculo-spiral nerve were generally unsatisfactory. They are inclined to believe that better results will be obtained in these cases if tendon transference of the flexors to the extensors of the wrist is done instead of the nerve anastomosis, especially if there is a defect of any extent in the nerve. Recently I operated on a man with complete wrist drop, transferring the flexor carpi radialis and flexor carpi ulnaris to the extensor tendons of the wrist. The man can now extend the wrist and has good grasping power, whereas before he could not extend the wrist and could grasp objects only in a very awkward manner. I have seen quite a number of anastomoses for division of the musculo-spiral nerve, but have never seen a good result. Therefore, it would seem as though better results would be obtained in wrist drop by transferring the flexor tendons to the extensor tendons than would be obtained by any operation on the nerve.

Dr. Charles M. Jacobs, Chicago: A man, over 40 years of age, had a Dupuytren contraction involving the ring and little fingers. I made a careful dissection of the palmarfascia, but was unable to straighten out the little finger because of a shortened tendon; so I did a tendon lengthening. Following the operation a plaster cast was applied to hold the little finger in the extended position. The cast extended only up to the wrist. Several weeks later I noticed that the patient's hand dropped and that he was unable to extend it. The cast was taken off and I found that he had a flaccid paralysis, quite different from the ischemic paralysis which sometimes follows the application of a cast. I should like to ask whether Dr. Steindler applies casts following his operations and if he has had an experience similar to mine.

Dr. Arthur Steindler, Iowa City, Iowa: I appreciate Dr. Porter's difficulties regarding adhesion of the flexor tendons. Since I have been doing an arthrodesis I have had much less occasion for flexor transplantation. The flexor tendons are not as suitable for transplantation as the extensors. I have, however, united the tendon of the flexor carpo-ulnaris, leading it through the interosseus ligament to the extensors of the fingers after the stability of the wrist has been secured. Otherwise, I should not consider this a good procedure. While I have not had excellent extension, I obtained sufficient extension power in the first case so that the patient could freely open and close the hand. In reply to Dr. Lord, I would say that I have already stated what he did regarding stability of the wrist. I have no experience with rotating the bone; but in those cases in which the apposition of the thumb was missing on account of paralysis of the thenar muscles, I got good results so far with the plasty of the pollicis longus, which I have demonstrated. We had not only the wrist drop, but also the opposite deformity, in infantile paralysis.

VENEREAL DISEASE IN THE THIRTY-NINTH DIVISION *

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The problem of venereal disease in the Thirty-Ninth Division is similar to that in any other divisions in training at the various cantonments. The Thirty-Ninth Division is located at Camp Beauregard, which is situated about 5 miles from Alexandria, La., and is made up of the National Guard troops of Louisiana, Mississippi and Arkansas, augmented by draft troops from these states.

At first, as would be expected, by far the greater number of venereal cases were old ones brought in by the men from other cities. Later on, especially after the quarantine which existed between the camp and Alexandria on account of meningitis was lifted, the percentage of new cases began to rise.

PROGRAM OF ATTACK

In the handling of the venereal problem in the Army, a certain program of attack has been prepared in the Surgeon-General's Office and is being carried out. This consists of public as well as personal measures, and is briefly as follows:

Public Measures.—A. Social measures to diminish temptations: 1. The suppression of prostitution and the liquor traffic in the extracantonment zones. 2. The provision of proper social surroundings and recreation.

B. The education of soldiers and civilians: 1. The education of soldiers is accomplished by: (*a*) lectures, (*b*) pamphlets and (*c*) exhibits. 2. The education of civilians is accomplished by the same measures through such organizations as the Young Mens Christian Association, the Young Woman's Christian Association, the Women's Christian Temperance Union, and the General Federation of Women's Clubs.

Personal Measures.—A. Instruction in prophylaxis.

B. Prophylaxis stations: 1. Regimental infirmaries. 2. Civil centers.

C. Medical care.

WORKING OUT OF THE PROGRAM

In the handling of the venereal problem in the Thirty-Ninth Division, nearly all of these measures have been carried out to a greater or lesser extent. An officer of the Sanitary Corps has been detailed by the Surgeon-General's Office for work in the extracantonment zone. A certain amount of cooperation has been given by the city authorities in the matter of the suppression of prostitution. This has consisted mainly in the closing of most of the houses of prostitution in the so-called segregated district. We have been informed by the officer of the Sanitary Corps referred to above that this has been done in a half hearted manner, and that at least one notorious house has remained open. We have also been informed that while many women have been arrested for violation of moral ordinances, there have been no facilities at the city jail for housing them, so they have been allowed to go free with the promise that they leave town. We have also been informed that in the matter of regulating the illegal sale of liquor to soldiers there has been a great deal of laxity.

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* Read before the Section on Genito-Urinary Diseases at the Sixty-Ninth Annual Session of the American Medical Association, Chicago, June, 1918.

It was hoped that a hospital for the treatment of prostitutes suffering with venereal diseases would be established, and the city authorities offered to furnish a building for this purpose if the parish authorities would maintain it. As yet this has not been done, and we have been informed that it probably will not be.

In the matter of providing proper social surroundings and recreation, the Army Y. M. C. A. has been of the utmost value in the camp itself, while the officer in charge of the work of the commission on Training Camp Activities has furnished more or less healthful recreation for the enlisted men, although the officers have had to shift for themselves to a greater or lesser extent. We wish to go on record in saying that the young unmarried officer needs healthful recreation as much as the enlisted man.

In the matter of the education of soldiers, lectures dealing especially with the methods of instructing men in venereal matters were delivered by the chief of the venereal service to all of the officers in camp. Illustrated lectures were also delivered to all of the men in the camp in regimental units, and these were supplemented by instruction by the company commanders. Small pamphlets dealing with venereal disease were also distributed to all men of the camp.

The education of the civilians in the extracantonment zone in venereal matters has been nil as far as we have been able to learn.

Of the personal measures of prophylaxis, as mentioned above, the soldiers all receive more or less instruction in prophylactic measures, and are warned that while the prophylactic measures protect the individual from venereal disease in the majority of cases, if taken in time, they are not absolute preventives.

Prophylactic stations have been established in all regimental and similar unit infirmaries where the prophylactic treatment can be obtained at any time day or night. The advisability of establishing a prophylactic station in Alexandria under military control has been recommended by us and is to be put into execution in the near future.

Army Regulations provide that a man who exposes himself to the danger of venereal disease, and who fails to take the prescribed prophylaxis, shall be tried by court martial.

MEDICAL TREATMENT

In the medical care of venereal disease, all cases are supposed to be first referred to the venereal service of the base hospital for diagnosis. Orders have been issued by the division surgeon that all men with urethral discharge be sent to the base hospital for microscopic examination of a smear, and all men with genital or other suspicious looking sores be sent without treatment for dark field examination. Before this order was issued, quite a large number of chancres were cauterized in the regimental infirmaries before the men were sent to the base hospital, rendering the finding of spirochetes impossible, and also a considerable number were so treated and syphilis not diagnosed until the secondary rash appeared.

Following the examination, men with acute gonorrhea enter the hospital and are treated there until the discharge diminishes, when they are returned to duty and their treatment continued in the regimental infirmaries under the direction of the chief of the venereal service. Chronic gonorrheal urethritis and complications of gonorrhea are treated either in the base hospital or the regimental infirmaries as the chief of the venereal service directs.

Cases of chancroid are treated in the base hospital until cured. Uncomplicated cases and complicated ones when the patients are convalescing are sent to the convalescent ward for housing and report to the venereal clinic for treatment at specified times.

All syphilitics are treated at the base hospital throughout the course of their treatment, although they are kept in the hospital only during the actively infective stage, that is, while they have open lesions. At other times they remain on duty and report for treatment at specified times.

One of us[1] has advocated a plan for the handling of venereal disease which we consider will very materially increase the efficiency of the venereal service. Briefly, this plan consists of establishing a venereal dispensary at a convenient location in the camp where all cases of venereal disease which do not need hospitalization can be treated. This plan with certain modifications has been adopted by the Surgeon-General's Office and is to be put into effect at Camp Beauregard.

In the treatment of gonorrhea, we have not departed strikingly from the classical methods. In all acute cases the men are placed in bed on liquid diet for twenty-four hours and then on light diet. The urethra is flushed once or twice daily, depending on the severity of the condition, after urination, the patient being put in a recumbent position, with a warm solution of potassium permanganate, 1:10,000. Then a 5 to 25 per cent. solution of silver "nucleinate" is instilled into the anterior urethra with an all glass syringe having a rubber tip. Rising from the table, the patient holds the solution in the urethra for from three to five minutes, when it is voided into a commode and the patient returned to bed.

In the more virulent infections the urethra is not irrigated at first, the penis being held in hot salt solution several times daily and a hot water bottle applied until the inflammation subsides, when the irrigations and the instillations are begun. Internally, sandalwood oil and large quantities of water are administered, and sedatives when required.

When the purulent discharge begins to disappear, the patient is sent to duty with the recommendation to his regimental surgeon that mild astringent solutions of zinc sulphate and lead subacetate be employed.

Recently we tried in selected cases a 1 to 5 per cent. solution of dichloramin-T in liquid petrolatum. The stronger solution proved too irritating to the urethra, but the 1 per cent. solution is giving rather encouraging results. In most of the acute cases and in some chronic ones the purulent discharge disappeared more promptly than with some other methods.

In acute posterior urethritis and acute prostatitis, the patient is put to bed, and heat is applied to the parts, with hot rectal irrigations and anodynes when needed.

Acute epididymitis is treated by placing patient in bed with the scrotum supported and an ice bag applied. In some cases the scrotum has been incised and the epididymis punctured with gratifying results.

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[1] Thompson, Loyd: A Plan for the Better Handling of Venereal Disease in the Army, Mil. Surgeon, to be published.

Chronic gonorrheal infections of the urethra and prostate are treated in the usual manner with irrigations, instillations and prostatic massage.

In the treatment of chancroid we have found dichloramin-T in 5 per cent. solution applied as a wet dressing of considerable advantage in cases in which there is marked secondary infection. Other cases have been treated by simply cleaning them thoroughly, touching them with 10 per cent. silver nitrate and applying sterile petrolatum, while still others have been thoroughly cauterized with nitric acid, silver nitrate stick or the electric cautery.

In the treatment of chancroidal bubo, dichloramin-T has also been of distinct advantage.

Two plans for the treatment of syphilis have been used. At first we pursued the method of treating all syphilitics by giving weekly injections of 0.4 gm. of arsphenamin intravenously and 65 mg. of mercuric salicylate intramuscularly for six weeks. If this cleared up the symptoms, a Wassermann test was made one month after the last injection. If this was positive, another course of six injections each of arsphenamin and mercury were given, followed by another Wasserman test in one month.

If the test is negative after either course, a test is taken at monthly intervals, and if it again becomes positive the course is repeated.

Recently we have been treating all so-called primary and early secondary cases by giving five daily injections of 0.4 gm. of arsphenamin and repeating the course in one month with weekly injections of mercuric salicylate until symptoms of ptyalism appear. Of course, the mouth hygiene of all patients is attended to. In all old cases of syphilis, potassium iodid is given in rapidly increasing doses until symptoms of iodism appear.

CASES IN THE THIRTY-NINTH DIVISION

In the venereal service of the base hospital, during the eight months, September to April, inclusive, 605 cases of venereal disease were treated, of which 325 were gonorrhea and its complications, 25 chancroid, and 255 syphilis in all stages. These figures do not include all venereal cases of the division; quite a large number of cases of gonorrhea have been treated in the regimental infirmaries, and we have been unable to secure accurate data on them.

The accompanying table shows by months the number of acute cases of venereal disease which developed in the division, the rate per thousand and the number of venereal prophylactic treatments administered.

It will be noted that the largest number of new cases developed in November, when there were fifty-eight, and the smallest number in February, when there were but two. At first glance it would seem that the small number of cases in February was due to the quarantine between the camp and Alexandria, and probably it was indirectly due to that cause. On the other hand, it will be noted that a comparatively large number (399) of venereal prophylactic treatments were administered in February. In all probability this was due to the fact that while the men were not permitted to go to Alexandria, where they would be easily arrested by the military police, they were able to leave the reservation, and in spite of all that the authorities could do, prostitution flourished in the woods near the camp. Furthermore, it was usually necessary for the men to return to camp as quickly as possible, and they reported to their regimental infirmaries for prophylaxis much sooner after intercourse than when they went to Alexandria, and therefore the prophylaxis was that much more efficacious.

Of the 325 cases of gonorrhea and its complications treated in the venereal service of the base hospital, 100 were acute urethritis; 151, chronic urethritis; 41, epididymitis, acute and chronic; 5 prostatitis (this does not include the large number of cases of urethritis with more or less prostatic involvement); 22, cases of arthritis; 4, cases of stricture, and 2, cases of periurethral abscess. The longest incubation period recorded was nine days, and the shortest, thirty-six hours, with an average of four days.

The average incubation period of the twenty-five chancroid cases was eight days, the longest period recorded being sixteen days, and the shortest, two days. Six cases presented single sores, while nineteen were multiple. Eleven occurred on the prepuce alone, and one on the frenum alone. Three patients had sores on the glans penis and prepuce, and two on the glans penis, prepuce and balanopreputial fold.

In four cases there was no complication, in eight there was a bilateral inguinal adenitis, in four a right inguinal adenitis, and in three a left inguinal adenitis. In four cases there was a phimosis; three cases were complicated with syphilis and nine with gonorrhea.

ACUTE CASES OF VENEREAL DISEASE IN THE THIRTY-NINTH DIVISION

Month	Cases, Number	Rate per Thousand	Prophylactic Treatments, Number
September	30	10.53	247
October	29	4.57	342
November	58	2.90	744
December	31	1.40	350
January	26	1.13	99
February	2	0.088	399
March	19	0.87	866
April	12	0.55	470

Of the 255 cases of syphilis, 32 were primary; 155, secondary; 22, tertiary; 40, latent, and 4, cerebrospinal, including 1 paretic and 1 congenital.

Of the 32 primary cases the chancre was located on the balanopreputial fold eighteen times; the shaft of the penis, eight times; the frenum and the glans penis, twice each, and the scrotum and prepuce once each. In the remaining 233 cases, the location of the chancre, as obtained by noting the scar or from the history, was: balanopreputial fold, 31 per cent.; glans penis, 27 per cent.; shaft of the penis, 14 per cent.; prepuce, 11 per cent.; frenum, 5 per cent., and scrotum, 3 per cent. In two cases, or 0.9 per cent., the chancre occurred at the meatus, and in two more cases there had undoubtedly been a urethral chancre. In two cases of early secondary syphilis, extragenital chancres were seen. One of these was on the lower lip and the other on the cheek. The one on the cheek was seen before the secondary rash had developed, and was diagnosed clinically as syphilis; but as spirochetes could not be demonstrated after repeated trials, and owing to the fact that our Wassermann tests had to be sent to the department laboratory in Atlanta, taking from one to two weeks for an answer, treatment was withheld from this case until the secondary rash developed. The source of infection in this case was possibly an infected razor, as the patient stated he had used a razor belonging to a man he afterward learned had syphilis about two weeks before the development of the sore. Since this case was seen the laboratory of the base hospital has become equipped to perform the Wassermann test.

It is rather interesting to note the source of infection in all of these cases, that is, where the soldier was when he contracted the disease. Of the 255 patients, 111, or 44 per cent., contracted the disease before entry into the military service; 39, or 16 per cent., contracted it after being mobilized in the smaller towns of their states as follows: 20 in the towns of Mississippi, 10 in the towns of Louisiana, and 9 in the towns of Arkansas; 58 patients, or 20 per cent., became infected in the large camps as follows: 25 each in Jackson, Miss., and Little Rock, and 8 in New Orleans; 12 cases, or 5 per cent., were contracted in Alexandria. In 17 cases, or 7 per cent., the place of infection was unknown, but must have occurred since entry into the service.

The most striking figures, however, are those of eighteen cases, or 8 per cent., which were contracted while the victims were on furlough. The reason for these comparatively large figures is that men on furlough usually are unable to take the venereal prophylaxis.

The reason for the larger figures in the mobilization camps, both in the small towns where the National Guard companies were mobilized, and in the larger camps, is probably to be found in the fact that the prophylaxis rule was less strictly enforced than in Camp Beauregard.

The incubation period of the syphilis cases was unknown in thirty-four. The shortest time recorded was two days and the longest twelve weeks, while the average was twenty-two and one-half days. It is realized that in both the shortest and the longest period recorded the patients' statements are not to be taken as absolute proof of such incubation, but in both cases repeated questioning failed to bring out other evidence.

Of the syphiloderms, the macular, roseolar type was observed 45 times; the papular, lenticular, 49 times; the moist papular or condylomatous, 10 times; pustular lesions, 6 times; palmar and plantar syphiloderms, twice each; the macular, pigmentary lesion, twice; gummas of the skin, twice, and rupia and verruca, once each.

Mucous patches of the mouth were seen fifty-three times; ulcerating gummas of the mouth, three times, and leukoplakia, once.

Marked alopecia was seen three times.

Ten cases of syphilitic arthritis were observed. This condition was diagnosed only on finding definite joint changes with the roentgen ray, or when the subjective symptoms improved under specific therapy.

Only one case of syphilitic periostitis was seen; this was of the frontal bone. Syphilitic retinitis was seen five times, and two cases of syphilis of the stomach were diagnosed.

One case each of gumma of the testicle and gumma of the submaxillary gland was observed.

It is impossible as yet to draw any very definite conclusions from our treatment. However, we have been able in 102 cases to make Wassermann tests one month after the course of six injections of 0.4 gm. of arsphenamin and 65 mg. of mercuric salicylate. Of the 102 cases, fifty-six, which before treatment gave a ++ Wassermann (complete inhibition) gave a negative reaction after treatment, and all but one remained negative for periods of from one to six months. In one case a ++ was recorded two months after the negative had been obtained. One case of primary syphilis which gave a negative reaction both before and after treatment was ++ four months later.

In ten cases the ++ was reduced to a + by the treatment, and in three of these to a negative reaction by one more course. In fifteen cases a ± was obtained after treatment when a ++ was recorded before, while twenty-one cases still showed a ++ after the first course. Six of these showed a negative reaction after a second course.

A sufficient time has not elapsed to observe the effect on the Wassermann test of the more intensive methods of treatment, that is, five injections of arsphenamin on five successive days and a repetition of the course in one month with mercury to the point of salivation.

Of the 255 syphilis patients, thirty-five have been discharged from the Army on surgeon's certificates of disability. In thirty of these the disability was due to some manifestation of syphilis which did not yield to treatment, the other five patients being discharged for other causes.

SUMMARY AND CONCLUSIONS

The venereal problem in the Thirty-Ninth Division is similar to that in other cantonments.

There has not been the whole-hearted support of the citizens and authorities of Alexandria in minimizing the amount of venereal disease that has been shown in some cantonment cities.

The venereal prophylaxis as administered in the Thirty-Ninth Division has proved quite efficacious in preventing venereal disease.

The venereal prophylactic station in Alexandria under military control is to be established.

The use of dichloramin-T is of advantage in the treatment of certain cases of gonorrhea and chancroid.

The best method of treating early syphilis (primary and early secondary) is probably the daily injection of 0.4 gm. of arsphenamin for five days, repeating the course in one month, with weekly injections of mercuric salicylate to the point of salivation.

ABSTRACT OF DISCUSSION

Dr. William T. Belfield, Chicago: The United States Regular Army has been notorious the world over for its excessive venereal rate. Excluding the Philippines and China, where the rate was much higher, from 1906 to 1911 the home army averaged about 150 men per thousand per year of venereal infection. During that same period the venereal rate in the Japanese and French armies at home ranged about twenty-four, and in the Prussian and Bavarian armies, under twenty. In 1909 a timid attempt was made to introduce the so-called prophylactic treatment. Our medical men have always been regarded by the line officers as poor relations who are useful in the treatment of the sick and the wounded, but not used in their equally important function of preventing preventable disease. In 1909 the prophylactic treatment was really a joke. They used to furnish the soldiers with a packet shaped much like a cigar, and the soldier was instructed to use it after exposure. He was not commanded to use it; he could use it or not, as he pleased; and usually he did not please.

In 1912 the Army authorized the use of the prophylactic treatment not by the soldier himself but after his return to camp; and from that year on the venereal rate dropped in the Regular Army from 150 to 90 per year. According to the bulletins issued by the Surgeon-General's Office it would seem that the regular troops in this country are still averaging about 90 infections per thousand per year.

Undoubtedly the chief reason for this excessive venereal rate is our inefficient use of the prophylactic treatment. It has been shown that when properly used in the infirmaries within an hour after exposure, that treatment constitutes an almost complete prevention. Thus, of 1,180 men who received the treatment within sixty minutes after exposure, only one showed venereal infection; 1,172 received treatment between one and two hours after exposure; of these seven were infected. Of those who received the treatment between seven and eight hours after exposure, the rate per 1,180 had run up to forty-eight. It would seem that if we cannot bring the man to the treatment within sixty minutes, the treatment ought to go with him; and he should not only be told to use it, as he was in the old days, but court-martialed if he does not use it. He is court-martialed now if he fails to report the exposure and then develops infection. An anilin dye in the ointment would reveal his failure to use it.

Dr. F. M. McCallum, Kansas City, Mo.: While the teaching propaganda which is prevalent through the country is of great value, in many ways I do not think it would be anything like prophylactic. When I was in Honolulu in 1907-1909, the Preachers' Alliance got an idea that they would close up the resorts where the soldiers congregated, which they succeeded in doing, and venereal disease increased very rapidly. A year after that I was sent with the Fifth Cavalry about twenty or thirty miles from Honolulu, and we still had a great deal of venereal disease. I prevailed on the commanding officer to issue an order, which the major says now is a part of the army regulations, court-martialing men who neglected their duty in this respect. We used a 1:3,000 potassium permanganate solution and a 33 per cent. calomel ointment, and venereal disease diminished by 85 per cent. Prophylaxis, if insisted on by the regimental surgeons and in the regimental infirmaries, will do the most good in stamping out venereal disease among the soldiers.

Dr. V. G. Vecki, San Francisco: Formerly the words "syphilis" and "gonorrhea" were tabu in public, and anything in the way of a prophylactic was not considered. Now even cities are going to establish prophylactic stations; at least in California. Colonel Maus, of the United States Army, who really is the pioneer of prophylaxis in the Army, has finally gotten the power to do things. Formerly when the physicians of the country advanced something that would be of benefit to the public there was no power behind their recommendations. The people would not follow; but now when the power of the United States Army stands behind the use of prophylactic measures and behind the enforcement of the rules to prevent the spread of venereal diseases, something is going to be accomplished.

I am, and always have been, a great stickler for personal freedom. I certainly would not approve of certain measures which are being taken in California in ordinary times; but the main thing now is to win the war. All other interests must be put in the background; and as we cannot win the war with a diseased Army, we have to do all we possibly can to keep disease out of the Army. We must not, however, be carried away by any kind of a delusion that we are really diminishing prostitution, because that is not true. We hear all kinds of societies report that there is no more prostitution—because they do not see any more of it, and they do not know anything about it. Prostitution is only taking another form. It seems that there is some kind of an evolution. No man is satisfied to go to a common house of prostitution; he wants to go somewhere to some sort of social gathering, and very frequently prostitution is to be found there at present.

The only hope we have is in this personal prophylaxis, and you cannot expect a man to use it unless he knows that it is absolutely necessary and that it is good for him, so that we must give him instructions at the same time that we furnish him with the prophylactic. Who is going to instruct the man? The medical officer in the regiment ought to take a personal interest in the men and take them into his confidence, explaining to them in a way that they will know that these measures are taken for their personal benefit. Such instruction is badly needed.

Dr. A. L. Wolbarst, New York: A few years ago a man would not have dared to say the things we are saying today about prophylaxis; he would have been accused of "compromising with vice." That was the expression that was used against those who advocated prophylaxis five or ten years ago. Today Dr. Belfield struck the nail on the head when he said if the soldier will not come to the station to get prophylaxis, the thing to do is to bring prophylaxis to him. One of the most important elements of prophylaxis has been overlooked in this discussion. I read somewhere that one of the foreign governments has adopted a prophylactic package which contains not only the ordinary prophylactic but also one or two rubber condoms. That is the most efficient prophylactic, as nearly as we can give it to the men. If we could induce every soldier to use a condom we would thereby have brought prophylaxis to him in the best possible manner. There is nothing better that I know of for prophylaxis than a rubber condom. If we want to protect these men from getting disease, let us go the limit. We ought to drop this prudishness that exists about the condom—this idea of hiding our heads in the sand and saying it does not exist because we are ashamed of it. If prophylaxis is the thing aimed at, give them prophylaxis; protect these men by the best means that we have, even if that involves the use of a condom in addition to the other things. Then when these men come back to the station give them all the prophylactic treatment you can give them.

Dr. John R. Caulk, St. Louis: The two great problems in venereal diseases are, first, prophylaxis with which we should all agree, and second, in the Army to institute treatment which will get the men back to duty in the quickest possible time. As to Major Thompson's paper, I have just one suggestion, and that is with reference to acute posterior involvements, particularly acute epididymitis, for which we have for some time been using small injections of horse serum, with the most remarkable effects. In every case improvement has followed. In twenty-four hours the worst cases subside under the influence of this treatment, and in two or three days the patients are up and about; we do not have to keep them off duty. Some of the other cases that we followed show practically no scar in the epididymis. We first started with 10 c.c. of horse serum injected into the muscular tissues of the buttocks; but we found that 1 c.c. or 2 c.c. does just as well. I would suggest to Major Thompson to try it in the Army. I think he will get some very encouraging results.

Dr. A. E. Goldstein, Baltimore: It was stated that the best results were obtained with the prophylactic treatment when used inside of one hour after exposure. Camp Meade, Md., is supposed to be one of the best camps in the country. The length of time that it takes for a train to get from Baltimore or the nearest place in which the soldiers make visits is about an hour and a half; therefore, if a man returns from Baltimore to Camp Meade for his treatment he would necessarily not receive the full benefit of the treatment; so that in Baltimore they are establishing stations where the men can receive treatment, and good results are being obtained. The men on exposure immediately report to one of these stations, and within half an hour or forty-five minutes receive the prophylactic injection.

Regarding Dr. Caulk's mention of horse serum, we have not had any wonderful results with it, but have had good results with antimeningococcic serum. The only reason that these results have not been published is that we did not want to publish them until after trying them out thoroughly.

Dr. W. J. Wallace, Oklahoma City: I have never tried treating acute epididymitis by the use of horse serum. The treatment I have been using for years has been to incise over the most prominent part of the testicle through the layers of the tunica vaginalis and liberating the contents, which is usually a small hydrocele of the epididymis, break up adhesions and push the testicle through the incision of the tunica vaginalis, replacing it and closing the opening.

In this way, I get rid of all fluids and it prevents a recurrence. The patients generally make a rapid recovery. I perform this operation invariably in all of my private cases when I can persuade them to go to a hospital and it is the rule to perform this on all of my clinical cases at our dispensary.

Dr. A. E. Mowry, Chicago: Many men have venereal disease and will not report it because of the fact that they have to make their case public property in order to obtain treatment. If the doctor could treat the patient privately, many more of the men would take the treatment and try their very best to get rid of a disease which in the end gives them a great deal of trouble. I understand that this is being advised in the French army.

I would like to ask Dr. Thompson whether he advocates using the soluble mercurials, in big doses, two or three times a week, for the treatment of syphilis, rather than the insoluble salts. In my own experience the use of soluble mercurials in big doses has proved very much more efficacious in eradicating syphilis permanently and quickly than the insoluble salts.

Dr. W. G. Schulte, Salt Lake City: In regard to the use of mercury in the treatment of syphilis, I would like to know whether the major has used bichlorid in the salt solution intravenously? It has given good results in those cases where urgent treatment was necessary, using first one-thirtieth of a grain and increasing to one-tenth of a grain daily. In epididymitis we have found vaso puncture with the hypodermic needle good practice. The inflammation has subsided in forty-eight hours, without any horse serum.

Dr. William C. Quimby, Boston: The problem of venereal prophylaxis in the Army is a part only, although a large part, of the problem of venereal prophylaxis in civil life. The ratio of infection in civil communities of large population is infinitely greater than that in the Army. The Army, however, must draw its personnel from civil life in large measure at present; therefore, not only should we as physicians do our utmost to promote all prophylactic measures and instruction in sex hygiene in the Army, but we should also do it in civil life. Following, in a measure, the admirable steps taken by California, the state board of health of Massachusetts has secured legislation making venereal disease reportable. Of course, in the beginning such a measure has to go slowly, because of the fact that the physicians throughout the state have to form the habit of reporting. It will thus take several months, or maybe a year, before the statistics will be reliable. I think venereal disease has been reportable in Massachusetts for about three months; and even in this short time Dr. Kelley of the state board of health says that it already ranks third in the list of diseases; second only to tuberculosis and measles. This shows what an enormous incidence there is in civil life of gonorrhea and syphilis. The Massachusetts Medical Society has formed a committee to study the subject and endeavor in any way possible to aid not only the state board of health but also those members of the Army who have been delegated to work on sex hygiene questions. We have found in Massachusetts, and certainly it must exist in other states as well, that one condition which needs immediate and strenuous correction is the unwillingness of large hospitals, speaking broadly, to admit cases of venereal disease to their wards. This attitude has obtained not only in small private hospitals which are run for personal profit, but in the civic hospitals as well. We hope through the medical profession, in time, to get all the hospitals converted, so that they will be ashamed to show any unwillingness to admit a case of acute venereal disease.

In regard to combating venereal disease in civil life, insist on securing, if possible, from each patient the name of their partner, of whichever sex. In that way a great deal will be accomplished. I think this should be insisted on more especially in regard to syphilis, probably, than in regard to gonorrhea. It is now being done by Dr. Morton Smith in his syphilis clinic at the Massachusetts General Hospital, and with very good results. The donor of the infection is immediately placed under medical supervision.

Dr. E. H. Martin, Hot Springs, Ark.: In the treatment of syphilis it does not seem reasonable to give every man, no matter what his weight, the same amount of arsphenamin. The object desired in giving arsphenamin is to get the blood to become a solution of a certain strength. A man weighing 240 pounds, without extra fat, will have twice as much blood as one weighing 120 pounds. In the case of the man of 120 pounds, it is evident that he should receive only half the amount given to the larger man. I have found that one decigram of arsphenamin to every 20 pounds, approximately, of the patient's weight is always efficacious in secondary cases. Many heavy patients require eight decigrams and some a gram. I have given as much as twelve decigrams at a dose to a very large patient. I have found no harm to result in the way of increased toxicity in giving larger doses. The danger is in giving many doses rather than in giving large doses. All of the complications which have occurred in my experience followed a series of doses usually, sometimes after the second dose; but the rash and dermatitis that give so much trouble nearly always appear after a number of doses and often after small doses. In giving these large doses I find it entirely unnecessary to use mercury, which under the plan advocated by Dr Thompson nullifies the value of the subsequent Wassermann, if there is anything in the theory that mercury will sometimes bring about a negative Wassermann before a cure is established. If you bring about a negative Wassermann by adding mercury to the treatment, you do not know whether the arsphenamin has cured the patient or not; but after using large doses only until you have a negative Wassermann you may feel sure of a cure, especially if we accept the theory of the provocative effect of the drug.

Dr. Charles M. Harpster, Toledo, Ohio: In our city we were confronted with the venereal problem by a number of the large corporations. We were able to induce a number of them to permit of making a venereal survey. My office within the past year has examined over 3,000 men working for the large corporations who were sent to us for these examinations. This should be promulgated and put forward as a necessary war measure by every physician. We can then isolate those individuals that are infected, and give them proper venereal treatment.

Dr. Lawrence T. Price, Richmond, Va.: I would like to ask the major what regulations apply to the officers at Camp Beauregard on this subject. I understand that there are no regulations or exactions, and that it is left to them to abstain from sexual relations because they are officers. At Richmond the urologist sees as private patients a great many cases of venereal diseases affecting officers. These men transmit infection in the same proportion as enlisted men. The venereal situation has been very difficult for us to handle until recently. At the session of our legislature during the past winter, at least seven bills were introduced attempting to cover the problem; none of them passed.

The commonwealth's attorney of Newport News discovered an old law that stated that any person suspected of being immoral or venereally infected could be arrested and subjected to examination under the charge of being a "person of ill fame," and the disposal of the individual is being handled according to the facilities of the local health commissioners in the several cities. Since the meeting in Chicago, we have put the above into effect and I have treated over fifty cases without legal complications, and double this number of arrests have been made.

Dr. Granville MacGowan, Los Angeles: I am the executive officer of a medical advisory board which I think has more trouble on its hands than any other medical advisory board of the country. We have a million and a quarter of individuals to look after. The regulations in the selective service in regard to syphilis and gonorrhea are rather peculiar. Syphilis is no bar to service in the Army unless that syphilis has affected the nervous system, or unless there is deformity. If you were to attempt to get an army without having men who had gonorrhea you would not have an army. My belief is that not 10 per cent. of the men who reach the age of 30 have not had gonorrhea. I mean to say that 90 per cent. of the men who have reached the age of 30 either have had it or have it. My experience may be a little different from that of other people, but I believe that one man out of every five sitting in this room is a syphilitic—that is, 20 per cent.

As to the question of the measures which we took in the state of California toward keeping down venereal diseases, it is true enough that all of these measures are impossible of enforcement when this condition exists in society. In this last year I have seen three good men receive gonorrhea for their wedding presents from the women who appeared to be of good social status and against whom nothing wrong was known; but on close investigation these women admitted that they had been infected either by a former husband or by some lover whom they had trusted. I know of two instances in which the daughters of rich men of high standing in church were allowed to marry men who had gonorrhea, because their fathers said: "These men will get over that gonorrhea. We had gonorrhea when we were boys, and it did not amount to anything." "It is not much worse," one of them said, "than a bad cold." These women were married, and they were supposed to have been separated from their husbands on account of that. One of them I know has since lost her ovaries.

The question has to be handled according to the way the majors and the colonels of the cantonments will work it out to the best possible advantage. We cannot send for the men who do not have gonorrhea.

DR. LOYD THOMPSON, Hot Springs, Ark.: Many things could be said in regard to prophylaxis in a camp of soldiers. Very frequently a man will go out and indulge in sexual intercourse, tonight, for instance, and he will not report for his prophylaxis when he comes back. Tomorrow he will get another pass and not indulge, but he will come back and take the prophylaxis thinking that "saves his face," and he will not be tried because he took the prophylaxis finally. We have no way of knowing whether he took it on the night that he indulged or at some subsequent time. That is one great difficulty we have to face.

Another point is this: We have found on questioning a large percentage of the men that we have not got accurate data. We found that they were careless when under the influence of liquor when they indulge in intercourse, and that it was on such occasions that they got infected. I do not pretend to be a prohibitionist, but I am here talking prohibition because it is our duty as physicians to combat disease not only from the venereal standpoint but from the standpoint of inefficiency in every way. A soldier is not a good soldier if he indulges in alcoholics. Eighty-five per cent. of the men who come to the clinics with venereal disease, new cases, have been using alcohol, enough to make them either hilarious or drunk.

Dr. Wolbarst mentioned the use of condoms. There was an article in the *Military Surgeon* last month advocating this same thing; but personally I do not believe it will work. It might help some, but it will not work with certainty in all cases, because many men will not use a condom. They will not use it when they are drunk. We expect to establish prophylactic stations in Alexandria as soon as I return—two perhaps. They will be under military control, and we hope that that is going to help some.

Dr Mowry talked about the administration of soluble salts of mercury. We only give insoluble salicylate there, because we cannot see our patients every day or even oftener than once a week. Practically all our syphilitics are on duty, and after the acute infectious stage has passed, which does not take very long, they are on duty, and we do not like to ask to have them come for treatment oftener than once a week. I have used an intravenous injection of mercury a great deal, and advocate it in certain cases. I use the benzoate more frequently than the bichlorid, however.

Dr. Price talked about the officers. I am not absolutely certain about the Army regulations in this matter, but I believe that they are the same for the officers as for the men; but they are winked at. In Camp Beauregard I have never known of an officer being tried for infractions of the rules in regard to venereal diseases. Quite a number of the officers there have come to be treated, the same as the privates do.

Dr. MacGowan said that he considered that 20 per cent. of all the men in this room were syphilitic at one time in their lives, and that 20 per cent. of men in all walks of life were. I can hardly agree with him on that. Certainly, from the number of Wassermann tests I have made I have not gotten such high figures as that, either in the Army or outside of it.

A SUCCESSFUL VENEREAL PREVENTION CAMPAIGN

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The West recognized venereal diseases as a public health problem and undertook venereal prophylaxis when in the spring of 1913 Seattle established the first free municipal venereal clinic. It had as its chief the genito-urinary surgeon of the City Hospital, and was located in one of the outpatient rooms of the hospital. The object was to treat all indigent venereal patients, the surgeon donating the time and the city furnishing the equipment and medicine. Both male and female patients were treated, and any necessary surgical work was done in the hospital. That clinic is still running today.

In 1917, numerous individuals and various organizations tried to devise some means of decreasing venereal diseases among soldiers and sailors visiting our cities. Little came of this because of no two having the same idea, until the Committee on Venereal Prophylaxis of the state medical association, aided by public spirited persons, established two venereal prophylaxis stations. One was in Seattle and one in Tacoma. Here men exposed to venereal diseases could secure preventive treatment free of charge.

In October, 1917, the military authorities, in conformity with the national program for the prevention of venereal diseases, called the attention of Seattle to existing vice conditions. The result was the formulation of the plan outlined in the following paragraphs:

All persons known to the health department or police as prostitutes are arrested and held for a medical examination. When the police arrest these supposed prostitutes or pimps they put a disorderly person charge against each individual, and immediately turn the person over to the health department for examination as suspected of being infected with a communicable disease. This person is now under the jurisdiction of the health department and not admitted to bail until released as not infected. If on examination he or she is found to have a venereal disease, appropriate treatment is begun.

To be classed as diseased, the person must have a positive Wassermann reaction or a positive gonorrhea slide or clinical chancroids. Clinical evidence has to be confirmed by laboratory findings and weak positive Wassermann reactions by clinical evidence, and all evidence, both laboratory and clinical, whether diseased or not, confirmed by a second person. Physicians' health certificates are ignored, as in thirty cases collected, none were given after a thorough examination. If found not diseased, the person is returned to the police, and goes through the police court in the regular way on a disorderly person charge.

In an examination of 513 prostitutes and their associates by the Seattle Health Department, the findings of which are given in the accompanying table, 78 per cent. of the prostitutes were diseased, 60 per cent. having syphilis, 37 per cent. gonorrhea, and 17 per cent. both syphilis and gonorrhea, and among men associating with or living off prostitutes, 35 per cent. had syphilis, 27.5 per cent. gonorrhea, and 8.5 per cent. both.

All the diseased are regarded as actively or potentially infective. Women with syphilitic histories dating back twenty years were found with vulval mucous patches. One congenital syphilitic had a specific pharyngitis and chancroidal infection; no syphilitic, therefore, could be regarded as not likely to become infectious at any time. The policy is to regard all infected prostitutes and panders as a menace to the public health and treat them accordingly.

During the period between November 9 and July 1, the city treated in its quarantine stations 219 women with syphilis, releasing 120 with negative Wassermann reactions, and 126 women with gonorrhea, releasing 105 as cured. During the same time forty-five men with syphilis and thirty-four with gonorrhea were treated. The average number under treatment was about 150, though at one time 235 were interned. Forty-one women and twenty-one men were broken of the drug habit during treatment.

DISEASE RATING OF FIVE HUNDRED AND THIRTEEN PROSTITUTES AND THEIR ASSOCIATES*

	Women, Per Cent.	Men, Per Cent.
Syphilis	42.6	20.8
Gonorrhea	17.4	19.0
Syphilis and gonorrhea	17.0	8.5
Chancroids uncomplicated	0.2	0.1
No disease	22.0	47.0
Total diseased	78.0	53.0
Total syphilis	60.0	35.0
Total gonorrhea	37.0	26.4

* Findings in an examination of 384 women and 129 men by the Seattle Health Department between October, 1917, and July, 1918.

A syphilitic to be released must have a negative Wassermann reaction as well as no clinical signs, plus sufficient treatment to make a negative reaction of value. This treatment consists usually (according to the case) of weekly arsphenamin injections plus mixed treatment to saturation. Usually it required at least three months to secure a negative reaction. Wassermann tests for release are taken a week after the mercurial treatment has beeen suspended.

A gonorrheic must have three consecutive negative slides at least forty-eight hours apart, with all treatment suspended for at least forty-eight hours before taking the first. Men are also subjected to prostatic and seminal vesical massage.

The prime object is to prevent disease by removing the sources of infection, and then keep the girls from relaxing into former habits and becoming reinfected. All with homes are sent to their parents, and homes and occupations found for the others. All within a reasonable distance are required to report in person every two weeks after release.

Since the Seattle campaign began, the other cities of the state have taken up the work. The state board of health likewise has made venereal disease reportable. The requirements for release are probably the most stringent in the country, but public health demands the interning of all prostitutes and of men living off them as potential carriers of disease.

964 Empire Building.

DESCRIPTIVE PICTURE OF BERIBERI

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In the latter part of April, 1918, a four masted schooner arrived in New York harbor from a port in British West Africa. The cargo consisted of logs, rubber and cocoa. Of the original crew of ten men, eight of whom were from Finland, the skipper and the cook being German-Americans, eight remained, and all except the skipper were suffering from beriberi. The trip consumed eighty-five days, during which hardships of all sorts were experienced. The remaining seven of the schooner's crew, victims of the original Oriental disease, were detected at quarantine by the boarding officer and brought to the Hoffman Island State Hospital for isolation and treatment. These patients landed in a somewhat prostrated condition, and one of them died the following day of acute dilatation and hypertrophy of the right ventricle, his case being an acute pernicious dry form of beriberi. In addition to the heart, the liver and kidneys were also affected.

CLINICAL OBSERVATIONS

Of the six patients, three were suffering from the wet or edematous form of beriberi. They complained of pain in the abdominal, epigastric, thoracic and lumbar regions, and had a general lassitude. The other three patients were suffering from the dry form of beriberi with similar symptoms. They had muscular atrophy; the calves of the legs became thin and flabby and the thigh emaciated with a sharp anterior edge of the tibia; their reflexes were somewhat altered and slow in response. One of these patients had as a complication scorbutus, and another, dermatitis exfoliativa. The patients had an evening temperature between 100 and 101 and a fraction, with an increased morning pulse rate to 105 while the temperature was normal. Now and then the stethoscope reflected an echo of a slight systolic murmur, which disappeared and reappeared until complete cure was effected. The laboratory findings were negative as to blood and feces, but urinalysis revealed albumin in small percentage in two cases and a trace of sugar in one case. Microscopically, epithelial casts of renal origin were detected. I noticed particularly some erythema on the hands and simple conjunctivitis in three patients out of the remaining six. The patients were as hungry as wolves, and food was given to them generously, their diet consisting of fresh fruits and vegetables, milk and fresh meat. They hated the sight of rice, and that Oriental dish was excluded, of course, from their bill of fare. They walked in the hall of the ward in a way that reminded the nurse of people dancing the "hesitation." They were constipated, and laxatives were frequently administered to them for relief.

In the line of drugs, cardiac stimulants, quinin and general tonics seemed favorable, and the careful and systematic administration of these brought the patients to complete recovery within thirty days of their admission into my service. The nurses in charge of the state ward took deep interest in the care of these beriberi patients, as it was their first experience in caring for the Japanese disease, and as they were preparing to join the Red Cross, there was a possibility of their being sent to tropical or semitropical countries for duty where they might have to deal again with beriberi. The patients, in their turn, were grateful, drew pictures of the schooner with a view of West Africa, and gave these to the nurses and dietitians as souvenirs before leaving Hoffman Island, which they did in the best spirits and physique.

CAUSATION AND INCIDENCE OF BERIBERI

Fraser and Stanton hold that the substance in unpolished rice that prevents beriberi is phosphorus pentoxid present to an extent of about 0.53 per cent., and reduced in polished rice to 0.26 per cent. Okata and Kokubo, Japanese army surgeons, reported the discovery of a diplococcus for beriberi, but inoculation experiments on monkeys have been negative. Hence the bacteriology of beriberi is still in the experimental stage. It is asserted also that feeding chickens and birds with spoiled rice has produced polyneuritis the same as in man. This will strengthen the theory of decomposed food and the pathogenic process of metabolism with the development of bacteria causing the kakke, or beriberi.

Beriberi is not limited to Oriental countries such as China, Japan, India and the Philippine Islands, but cases have been observed in Africa and in South America, especially in Brazil, and in the United States and Canada, England, Ireland and continental Europe. There are 50,000 cases yearly in Japan, and in the Philippine Islands there were 3,334 cases in 1910. The mortality in beriberi averages 33 per cent.

CONDITIONS ON THE TRIP FROM AFRICA

Before leaving the West African coast, the crew took fresh water from that land for drinking and cooking. Also they had provisions consisting of canned goods (meat and fish) and canned vegetables. The skipper shared the same bill of fare with his crew, and in addition he had whisky, pies and puddings, which he selfishly consumed in full view of the crew. Rain water was obtained during the trip, but the skipper kept it all for his own use, forcing the crew to drink only the water taken from the West African coast.

They alternated dishes with corry, rice and salt meat. Their chief mate left Assinie in a serious physical condition and died at sea a few days later. The donkeyman died also. Both sailors died evidently of beriberi. The seven other members of the crew became ill in the middle of their journey to New York with symptoms of swollen legs, pain in the epigastrium and in the chest and sides with a general "tired feeling." None except the captain brushed the teeth. They had for treatment cathartics and quinin, but the disease was slowly developing during the trip. After the swelling disappeared, numbness in the legs, paresthesia and coldness of the limbs ensued for several days preceding death.

CONCLUSION

I can agree with Braddon and Cooper that the continuous consumption of large quantities of carbohydrates, with their vitamin, causes beriberi, and that fresh vegetables and a mixed diet are evidently the best prophylactic measures.

Average Mental Ability.—Go into any court of law and hear a dozen witnesses describe the same event. You will become convinced that the average person cannot see nor hear more than one half straight, and cannot draw a conclusion from what he sees or hears more than 25 per cent. straight.—E. P. Lyon, *Texas State Journal of Medicine*.

Military Medicine and Surgery

IMPORTANCE OF BLOOD CULTURES IN PNEUMONIA

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That many cases of pneumonia have an associated septicemia has long been known. The relation between the degree of septicemia and the severity of the disease has also been studied and appreciated. In fact, the statement has been made that "in the more severe cases a true septicemia is usually present, and this always occurs in the cases ending fatally." I have had no opportunity to make any review of the literature on this subject. I desire merely to give a brief report on the experience at this base hospital in order that the results may be compared with those obtained at the other camps and to urge the advisability and importance of taking blood cultures as a routine in all cases of pneumonia among the soldiers. The information thus gained is of great value in prognosis and serves as a helpful guide to the specific therapy in the Type I cases.

TABLE 1.—FREQUENCY OF POSITIVE BLOOD CULTURES IN THE VARIOUS TYPES OF PNEUMONIA

	No. Cases	Positive Blood Cultures	Per Cent.	Serum Treated	Empyema	Mortality	Per Cent.
Type I	13	6	46.1	12	1	1	7.7
Type II	4	1	25.0	0	0	1	25.0
Type III	1	0	0.0	0	0	0	0.0
Type IV	24	1	4.2	0	1	1	4.2
Undetermined	12	0	0.0	0	0	0	0.0
Hemolytic streptococcus	9	5	55.5	0	9	5	55.5
	63	13	20.6	12	11	8	12.7

During the months of May, June and July, blood cultures were taken as a routine in all cases diagnosed clinically as lobar pneumonia and in a few cases diagnosed as bronchopneumonia. These cultures were made in practically all instances within twenty-four hours after the patient was admitted to the pneumonia ward. If the admission culture proved negative and the condition of the patient continued satisfactory, the cultures were not repeated. On the other hand, if the admission culture was positive or the patient's condition continued to grow worse, the cultures were repeated as often as considered necessary. The greatest number taken in any one case was five.

In all cases the cultures were made by withdrawing from 15 to 20 c.c. of blood into a sterile Lüer-type syringe; from 10 to 15 c.c. were added to a flask containing from 100 to 150 c.c. of plain meat infusion broth; the remaining 5 c.c. were divided into 2 and 3 c.c. portions, each thoroughly mixed with 10 c.c. of plain melted agar, and plates were poured in the usual manner. All cultures were kept in the incubator for at least four or five days before being discarded as negative. In all positive cultures the organism was identified by staining and cultural characteristics, by tests for bile solubility, and if bile-soluble, the type of pneumococcus was determined by the reactions with immune serums.

Ninety-three cultures were taken on sixty-three different patients, and of these, eighteen, or 19.3 per cent., were positive. Thirteen of the sixty-three patients, or 20.6 per cent., had one or more positive cultures during the course of the disease. The frequency with which positive cultures were obtained in the various types of pneumococcus pneumonia, in hemolytic streptococcus pneumonia and in those in which the etiologic factor remained undetermined, is shown in Table 1. The increased tendency of the more virulent organisms (hemolytic streptococcus and pneumococcus Types I and II) to invade the blood stream is clearly apparent. Attention is also directed to the high mortality among these patients, with the exception of the Type I patients, who enjoyed the advantage of specific serum therapy. All the patients with hemolytic streptococcus infection developed empyema.

A list of the Type I pneumococcus cases is given in Table 2. These cases, as a rule, require much larger amounts of serum than those with negative cultures, and it is important that the serum treatment should be instituted early and pushed vigorously, especially during the first few days. The treatments should be repeated every six or eight hours, day and night, as long as the rectal temperature is 101 or higher. The rapid subsidence of the septicemia after one or two injections of serum is very striking. Even in the case of C. M., who died on the seventeenth day of the disease, the septicemia disappeared entirely after the second injection. The temperature, however, remained high, and he developed a double otitis media and finally died. The pneumonic process remained confined to the original involvement, namely, the left lower lobe, and the presence of empyema could never be demonstrated either by roentgen ray or needle, though the patient was explored repeatedly. A necropsy was not allowed. Death seemed to be due to the toxemia, which the serum, though administered generously (1,500 c.c.), did not seem to alleviate. It does seem, however, in this case, that the serum prolonged life. The temperature and septicemia curves of this case are shown in Chart 1. This case is very similar to one described by Cole,[1] in which a "persistent concentration of immune bodies could not be maintained in the patient's blood by the administration of immune serum." Of the six Type I cases with positive blood cultures, only one was fatal.

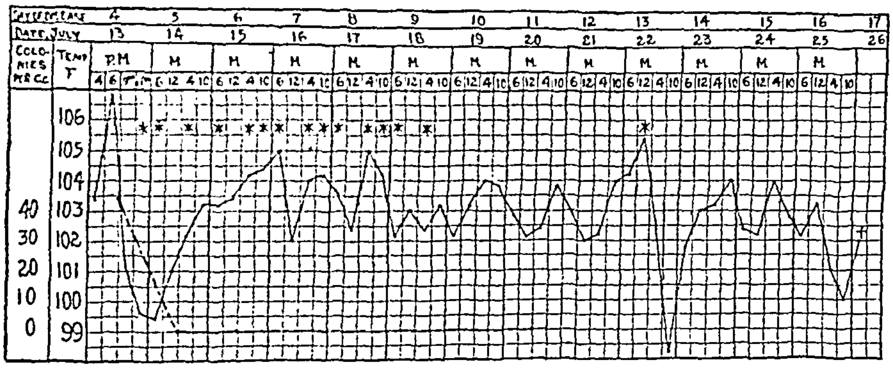

Chart 1.—Temperature and septicemia curves in a fatal case of Type I pneumonia. Note the critical fall in the septicemia curve after the first two injections of specific serum. Solid line, temperature; broken line, septicemia; *, injection of 100 c.c. of serum; †, death of patient.

In Type II cases a septicemia is always of grave import. In the four cases listed in Table 2 septicemia was demonstrated in only one. This patient had a very heavy infection, approximately 100 colonies per cubic centimeter, and died ten hours after the blood culture was obtained.

TABLE 2.—RAPID DISAPPEARANCE OF THE SEPTICEMIA IN TYPE I CASES THAT ARE SERUM TREATED

Name	Day of Disease	Blood Cultures Colonies per C.c.	Amount Type I Serum Used, C.c.	Empyema	Result
O. O.	3	7	500	No	Recovery
	8	0			
L. H.	6	11			
	10	0			
	21	0	1,100	No	Recovery
J. D.	6	1	None	Yes	Recovery
F. N.	2	15			
	4	0	300	No	Recovery
K. L.	2	1			
	4	0	300	No	Recovery
O. M.	4	44			
	5	0			
	6	0			
	11	0	1,500	No	Died

We had only one Type III case during this time. The blood culture on admission was negative, and the disease ran a very mild course.

Of the twenty-four IV cases, a positive blood culture was obtained in only one. Clinically this patient showed consolidation of the entire left lung. He was admitted to the pneumonia ward on the sixth day of the disease, and a blood culture was made the same day. It showed thirty-one colonies per cubic centimeter. A second culture was made two days later, July 12, and showed a slight increase to thirty-four colonies per cubic centimeter. July 13, a third culture was made and showed a reduction to eleven colonies per cubic centimeter; July 14, there were only four colonies per cubic centimeter, and, July 15, the septicemia had entirely disappeared. The clinical course paralleled the septicemia, but even during the height of the disease the patient appeared quite comfortable, and at no time was his condition considered critical. As soon as the blood became sterile, the patient entered on a rapid and uninterrupted convalescence. This case

TABLE 3.—HIGH MORTALITY IN HEMOLYTIC STREPTOCOCCUS SEPTICEMIA

Name	Day of Disease	Blood Cultures Colonies per C.c.	Empyema	Result	Remarks
A. M.	4	0			
	14	0			
	23	0			
	29	0			Bl. Cult. positive in broth
	30	1	Yes	Died	Bl. Cult. positive in broth
F. S.	10	0			
	15	0			
	16	..	Yes	Died	Postmortem blood culture positive in broth
T. S.	7	7	Yes	Died	
C. S.	7	50	Yes	Died	Death occurred 10 hours after blood culture was taken
A. Y.	2	0			
	3	0	....	....	1 hour before operation
	4	0	....	....	14 hours after operation blood culture in broth positive
	5	0	Yes	Recovered	Blood culture in broth negative

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1. Cole, Rufus: Jour. Exper. Med., 1917, **26**, 465.

demonstrates that a patient may have a relatively severe septicemia with an organism of low virulence and still not be very sick. The proof that we were dealing with a Type IV pneumococcus was established by injecting several cubic centimeters of one of the blood cultures in broth intraperitoneally into a white rat. The rat died in less than sixteen hours, and at necropsy showed a severe peritonitis, the exudate containing large numbers of gram-positive encapsulated diplococci which were bile soluble but did not react specifically with Type I, II or III serum. A second rat was injected intraperitoneally with 2 c.c. of sputum emulsion from the same patient. This rat also died over night. At necropsy an identical organism was recovered from both peritoneal exudate and heart's blood. The temperature and blood culture curves in this case are shown in Chart 2.

There were twelve cases in which the etiologic factor was undetermined. None of these patients had a positive blood culture, and all recovered.

A list of the hemolytic streptococcus cases with positive blood cultures is given in Table 3. There were five of these cases; all were complicated by empyema, and four of the patients died. This shows the gravity of septicemia in these cases. A. Y., who recovered, had a negative culture one hour before his operation for empyema. Another culture taken the following morning was negative in the plates but positive in the broth. Cultures were repeated twenty-four hours later and were entirely negative. This case illustrates that a patient may have a slight hemolytic streptococcus septicemia and still recover. The supposition that a relatively small number of organisms gained access to the blood stream through the operative wounds seems reasonable. The patient apparently developed a rapid immunity and overcame the septicemia before it gained much headway.

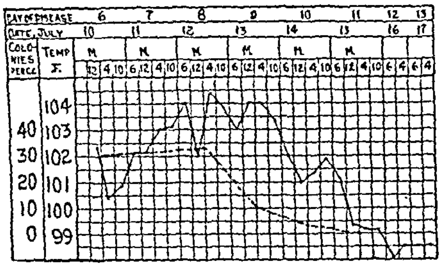

Chart 2.—Temperature and septicemia curves in a case of Type IV pneumonia in which the patient recovered. Note the initial rise followed by the gradual fall in the septicemia curve, and the parallelism of the curves.

In direct contrast to the foregoing case is that of M. A. This patient had a negative blood culture antemortem, and a second blood culture taken eight hours postmortem was negative both in the broth and in the plates. The necropsy disclosed a very extensive bronchopneumonia involving most of the right lung and part of the lower left lobe. In addition there was an empyema on the right side which had been diagnosed antemortem. This patient evidently died from a severe toxemia rather than from a septicemia. All the other hemolytic streptococcus patients with negative blood cultures recovered.

SUMMARY AND CONCLUSIONS

1. Blood cultures in pneumonia are valuable from the standpoint of prognosis and as a guide in the serum therapy of the Type I cases.

2. Septicemia is more common with the more virulent strains of pneumococcus and with *Streptococcus hemolyticus.*

3. Type I pneumococcus septicemia responds very promptly to immune serum treatment.

4. A moderately severe Type IV pneumococcus septicemia may be quickly recovered from.

5. The mortality in hemolytic streptococcus septicemia is very high, but one case is reported in which the patient had a slight transient septicemia and recovered.

SELECTIVE ACTION OF DILUTE SODIUM HYDROXID ON CERTAIN RACES OF THE PNEUMOCOCCUS *

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It was demonstrated by Neufeld in 1900 that pneumococci, in contrast to many species of bacteria, are readily soluble in bile. Neufeld[1] stated, on incomplete evidence, that the bile salt is the constituent of bile which is responsible for the lytic action on the pneumococcus. This statement found ready acceptance, very possibly because of the well-known action of bile salts in dissolving red corpuscles.[2] However, in the routine tests for the differentiation of pneumococci and streptococci, a solution of bile salts dissolves the pneumococcus so feebly and so irregularly that whole bile is used in preference to the purified salts. The concentration of bile salts in bile varies widely, but as a rule it is less than 1 per cent.; a 10 per cent. solution of bile salt, however, is recommended if these salts are substituted for bile in the solubility tests.[3] One part of this 10 per cent. solution is added to nine parts of a broth culture of the organisms to be tested. Rosenow[4] mentions the solution of pneumococci in 0.5 per cent. bile salt. Such behavior is exceptional; with a 2 per cent. solution of sodium cholate, Cole[5] found that many typical strains dissolved incompletely or not at all.

It seems probable that other constituents of bile play an important rôle in the solution of the pneumococci. The pigments merit consideration because of their cytolytic action in the presence of light (photodynamic action). Some bactericidal but no appreciable bacteriolytic action could be demonstrated with pneumococci under the following conditions:

One per cent. of bilirubin was dissolved in salt solution with the aid of a little alkali. One part of this was mixed with nine parts of a suspension of pneumococci in salt solution. Strains belonging both to Group 1 and Group 2 were tested. The mixture was exposed in thin walled test tubes of ordinary glass, 1 cm. in diameter, to direct sunlight for five hours. The bile pigment became much lighter in color but this mixture remained turbid and stained preparations showed numerous pneumococci. Therefore it does not seem that the bile pigments alone could play any important part in the solution of pneumococci by bile under ordinary routine conditions.

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* The observations reported in this paper were carried out at the Base Hospital, Camp Dodge, Iowa, and at the Pathological Laboratory of the Johns Hopkins Medical School, Baltimore.

[1] Neufeld: Ztschr. f. Hyg., 1900, **34**, 454.

[2] The term "bile salt" ordinarily indicates the salt of cholic acid conjugated either with glychocholate or taurocholate. Since the cholate radical is the active portion of the molecule, sodium cholate is sometimes employed instead of the conjugated products.

[3] Hiss and Zinsser: A Textbook of Bacteriology, Ed. 3, New York, D. Appleton & Co., 1916, p. 370. Avery, Chickering, Cole, and Dochez: Monographs of the Rockefeller Institute, 1917, No. 7, p. 13.

[4] Rosenow: Jour. Infect. Dis., 1910, **12**, 124.

[5] Cole: Jour. Exper. Med., 1912, **16**, 644.

The alkaline reaction of bile deserves attention since neither the pigments nor the bile salts can remain in solution in a distinctly acid medium. A specimen of calf's bile after autoclaving and filtration was titrated roughly against litmus paper; its alkali content corresponded roughly to a hundredth normal solution. The importance of avoiding an acid reaction in carrying out the bile solubility test was noted by Cole,[5] who advises a slightly alkaline medium composed of primary and secondary phosphates. On using a stronger alkali, however, it will be seen from the following data that certain strains of pneumococci dissolve rather readily in dilute sodium hydroxid alone without the aid of bile. For example, one strain (Group 2) dissolved readily in twenty-fifth normal hydroxid. Another culture of the same strain after incubation for twenty-four hours at 37 C. was allowed to stand for one week at room temperature. The washed sediment of bacteria then dissolved in remarkably high dilutions of sodium hydroxid. One part of a very cloudy suspension of the washed bacteria cleared immediately when mixed with an equal part of a five hundredth normal solution. Almost complete solution took place with thousandth normal sodium hydroxid, a dilution that failed to react with litmus paper. This high degree of solubility was not found frequently, however, and it occurred only in the older cultures. Fresh cultures of several strains were tested for their solubility (1) in bile, (2) in sodium taurocholate and (3) in sodium hydroxid.

TABLE 1.—SOLUBILITY OF SUSPENSIONS OF PNEUMOCOCCI*

Strain	Whole Bile	Bile Salt 2%	Sodium Hydroxid N/5	Sodium Hydroxid Effect of Higher Dilutions
Group I				
1	C	C	C	N/50 C
2	C	0	AC	
3	C	AC	C	N/25 C
4	C	0	C	N/100 C
Group II—typical				
5	C	0	C	N/100 C
Group II—atypical forms				
6	C	C	0	
7	C	C	0	
8	C	0	0	
9	C	C	0	
10	C	C	AC	
11	C	C	AC	
12	C	0	C	N/50 AC
13	C	0	P	
14	C	0	C	N/50 C
15	C	C	0	
16	C	C	C	N/100 C
17	C	AC	C	N/50 P
Group III				
18	C	0	C	N/10 AC
Group IV				
19	C	0	AC	N/25 AC
20	C	AC	0	
21	C	AC	C	N/100 C
Borderline group between pneumococci and streptococci				
22	P	0	P	
23	0	0	0	
24	AC	0	0	
25	AC	0	0	
26	AC	0	0	
27	AC	0	0	

* C, complete solution; AC, almost complete solution; P, partial solution; 0, no solution.

In order to secure a good suspension of pneumococci, inoculations were made from blood agar slants to glucose meat infusion broth. After eighteen hours' growth the broth cultures were centrifugalized, the sediment washed once with physiological sodium chlorid solution, and then suspended in saline. This suspension was neutral to litmus.

Bile of young calves was autoclaved. Before use the clear supernatant fluid was filtered off from the resulting precipitate. Sodium taurocholate was used in 2 per cent. solution in physiological sodium chlorid solution. This solution was slightly turbid and distinctly acid, but it cleared promptly on neutralization to litmus with sodium hydroxid. For the tests with sodium hydroxid, a fifth normal solution was used, and strains readily soluble in this were tested in more dilute solution. One part of the suspension of pneumococci was mixed with one part of each of the preceding solutions, giving, therefore, in the final preparations, a concentration of 1 per cent. sodium taurocholate and tenth normal sodium hydroxid. Solution often occurred immediately, though to secure constant results the mixtures were incubated for one hour at 37 C. before the final readings were taken. The results[6] are given in Table 1.

From the data in Table 1 it is seen that bile is a much better solvent for pneumococci than either sodium hydroxid (fifth normal) or sodium taurocholate (2 per cent.). In the cultivation of the pneumococci it has long been recognized that the development of acid in the medium inhibits growth; it was not evident, however, that some races are also very susceptible to alkali. The solubility in sodium hydroxid varies considerably even in the same immunologic group. It is unfortunate that a larger number of typical races were not available for study. The testing of a large number of strains of pneumococci might reveal some correlation between solubility in alkali and other characteristics, such as pathogenesis and virulence. In Table 1 it will be noted that a conspicuously large proportion of the atypical Group II strains are soluble in bile salt but not in sodium hydroxid. Of the strains in the borderline group between pneumococci and streptococci, it is noteworthy that none of these dissolve readily in either bile salt or sodium hydroxid. It would be impossible, however, to attempt any generalizations from a small number of strains.

In contrast to this ready solubility of some of the strains of pneumococci, it was found that ten strains of hemolytic streptococci isolated at Camp Dodge, Iowa, showed no evidence of any solubility with fifth normal sodium hydroxid.

TABLE 2.—EFFECT OF AGE OF CULTURE ON SOLUBILITY OF PNEUMOCOCCI *

Culture	Strength of Sodium Hydroxid N/5	N/10	N/50	N/100
Strain 1, 18 hours' growth	C	C	C	P
Strain 1, 12 days' growth	C	C	C	AC
Strain 18, 18 hours' growth	C	AC	0	0
Strain 18, 12 days' growth	C	C	C	AC
Strain 23, 18 hours' growth	0	0	0	0
Strain 23, 12 days' growth	0	0	0	0
Strain 24, 18 hours' growth	0	0		
Strain 24, 12 days' growth	C	C	C	C

* C, complete solution; AC, almost complete solution; P, partial solution; 0, no solution.

Some evidence was obtained in regard to the effect of the age of cultures on solubility of pneumococci in alkali. Four of the strains recorded in Table 1 were grown in glucose broth for twelve days and then tested according to the preceding technic. The results are given in Table 2.

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[6] These strains were collected and studied by Dr. Mildred Clough. I am much indebted to her for the use of this material and for her kind cooperation.

In Table 2 it is seen that, in the case of Strains 18 and 24, the older cultures were markedly more soluble than fresh ones. Strain 23 is of especial interest since neither the old nor the young cultures were soluble. Dr. Clough considers that this strain should probably be classed with the streptococci rather than with the pneumococci.

From the preceding data it is evident that, in testing the solution of pneumococci in bile, certain factors most be controlled in order to secure constant results; special attention should be given to the age of the culture and to the reaction of the medium.

Neufeld considers that the bile salts act specifically on pneumococci and thus resemble the immune bodies, in contrast to the chemical disinfectants, which act more or less alike on all bacteria. The solubility of certain strains of pneumococci in sodium hydroxid furnishes an example of a relatively high degree of specificity in a simple chemical substance.

In conclusion, it should be noted that the solvent action of bile on pneumococci is not easily explained. Moreover, the process may vary with the individual strains of pneumococci; this is indicated by the rather wide variation that different strains show in their solubility in bile salts and in alkali. The various constituents of bile, when isolated and tested separately, are less effective than the whole bile. An analogous situation exists in the effect of bile on certain ferments. A thorough explanation of the action of bile on pneumococci would be of service in any attempt at the therapeutic application of bile products in pneumococcal infections.

SUMMARY

The effect of bile salts does not adequately explain the solvent action of whole bile on pneumococci; in searching for other active constituents, no evidence was obtained of bacteriolytic action by bile pigments on pneumococci. Alkali in dilute solution (hundredth normal) was found to dissolve certain strains of typical pneumococci. A sufficient number of strains have not yet been tested for determining the exact relationship between solubility in dilute alkali and other characteristics of the pneumococcus, such as virulence and the immunologic groupings. Ten strains of hemolytic streptococci were tested and none were soluble in sodium hydroxid (fifth normal). In testing the solubility of pneumococci in bile, the age of the culture and the reaction of the medium are important factors. The explanation of this solvent action is by no means complete. It is quite possible that the process varies with the different strains of pneumococci; more complete data would be of value in any attempt at the therapeutic utilization of bile products in pneumococcal infections.

Utilizing Birth Records.—In the year 1916 over 172,000 searches were made of the records of births, deaths and marriages on file in the department of health in the city of New York, almost 100,000 being free searches of birth records for admission into school, obtainment of employment certificates and for granting of money to widowed mothers. Almost 20,000 paid searches were made of the records of births for various purposes. The uses to which the transcripts of the records of births were put were many, such as to obtain passports, to prove kinship in litigation of wills, etc., to obtain a license to marry in those cases in which the city clerk refuses to grant marriage licenses unless age is proved, to establish exact date of birth for use in criminal court, to obtain deposits in savings banks, etc.—W. H. Guylfoy, M.D., Registrar.

CONVOYS AND THEIR CARE

THE ADMITTING SECTION OF AN EVACUATION HOSPITAL DURING COMBAT

GEORGE de TARNOWSKY, M.D. (Chicago)
Major, M. C., U. S. Army
A. E. F., France

While the admission of patients is normally included among the duties of the officer of the day, in actual warfare it has been found necessary to appoint a special admitting officer for this extremely important and difficult task. The term "difficult" must be qualified, in order to make its meaning clear. If, by admission, we merely understand the "taking up" of the wounded by means of their field medical cards, the filling out of data on their clinical records — Form 55 A — and assigning them by rotation to their respective wards, it stands to reason that a squad of orderlies whose handwriting is legible, under charge of a junior officer, will meet such demands satisfactorily. If, on the contrary, and as should be the case, the admitting officer must, in addition to supervision of paper work, personally act as sorting officer (*triage* of the French), then his duties immediately assume great importance. Not only should he be a surgeon of quick and mature judgment, but he must also constantly have in mind, or on paper: (*a*) the relative technical value of the different surgical teams in the hospital; (*b*) the special surgical teams on duty (thoracic, neurosurgical, etc.); (*c*) the hours of the different surgical shifts, and (*d*) the available beds in each surgical service.

PERSONNEL AND DUTIES OF THE ADMITTING SQUAD

One sergeant and from four to six privates of the Hospital Corps, selected for their clerical qualifications, will suffice for ordinary convoys; this number may have to be doubled or trebled if the casualties are pouring in by the hundred. Rapidity and accuracy are both essential; ambulances must be promptly discharged and blankets, pillows and stretchers returned in order not to hinder transportation problems. A varying number of stretcher bearers must also be assigned for duty during the emergency, as well as a squad of orderlies to wrap up and make out receipts for clothing.

The hospital organization must be made elastic enough to meet all contingencies, rigidity must give way to flexibility, if one does not wish to see the evacuation hospital grounds littered up with a tangled mass of ambulances, stretchers and walking wounded—precious hours wasted because sudden shiftings of duties and details have not been foreseen and worked out.

Each admitting clerk should possess a quick, legible handwriting, together with a general knowledge of wound nomenclature and accepted abbreviations.

The patients classed as walking cases line up in front of the clerks' table, give up their field medical cards, receive a ward ticket and pass on rapidly to the buffet.

Stretchers are laid in rows in the admitting tent and the clerks pass rapidly from one to the other, recording all necessary data in duplicate, for all urgent cases. As fast as the duplicate clinical record is filled out, with the ward number recorded on it, the stretcher bearers carry each patient to the receiving ward, returning litter, pillow and blankets to the ambulance waiting outside.

The admitting officer, from an examination of the general appearance of a given patient, the pulse rate and written indications on the field medical card, decides as to his disposal. When in doubt, he should wait until the patient is in bed in the receiving ward, in order to make a thorough examination before coming to any conclusion.

In order to have at all times an accurate list of available beds, a register book is kept by the admitting sergeant. Based on the ward roster, taken after an evacuation has occurred, if any, a daily sheet is made out on which are recorded: (*a*) ward number, and (*b*) vacant beds in each ward, each vacancy being indicated by a vertical line *opposite* the ward number, for example: Aug. 20, W. I., 9 | | | | | | | | |

Whenever a patient is assigned to a ward, one of the vertical lines is crossed, so that the clerk—subject to orders—maintains an equable balance among the different services. At the bottom of the daily sheet are recorded the total number of vacant beds in the hospital, *total number of patients in the hospital, and* total number of admissions since the opening of the hospital.

Fig. 1.—American Red Cross Military Hospital No. 5: panorama of hospital tents, all belonging to the same unit.

A weekly list of convoys is also made up, with the total number received each day from 7 a. m. to 7 p. m. and from 7 p. m. to 7 a. m. At the end of each month, the total number of admissions during that period is also recorded. The details of this system were all worked out by Capt. J. D. Bruce, M. C., admitting officer and director of surgical material at the American Red Cross Military Hospital No. 5; the entire system has been so generally successful and has proved to be such an invaluable time saver that it has seemed worth while to describe all of its minutiae. The great problem in an evacuation hospital is to operate properly and rapidly on a large number of patients in a short space of time—the shorter, the better for each patient. I am sure that every surgeon will agree with me that much time is needlessly wasted in the operating room, waiting for patients. If one represents as 100 the total expenditure of time in a given surgical case—from the time the patient arrives in the ward until he returns thereto from the operating room—this number can ordinarily be thus subdivided:

Undressing and cleansing of patient	30
Preparation of operative field in ward	10
Waiting for turn in roentgen-ray room and fluoroscopy	10
Anesthetizing patient and placing him on table	10
Operation	20
Dressing, bandaging, immobilization and removal of patient from operating room	20
Total	100

A properly organized admitting tent and competent director of surgical material will easily quadruple the operative output of a surgical team—an all important item during a heavy battle.

SORTING (TRIAGE) OF THE WOUNDED

The rough-and-ready division of wounded from the regimental aid post or field hospital into walking and stretcher cases has only a relative bearing on the severity of the wounds or the urgency of their radical treatment. Many patients classed as "walking" cases have collapsed from internal hemorrhage or gas gangrene on admission or shortly afterward; many classed as "*stretcher*" *cases have turned* out to have only a superficial flesh wound or extra-articular contusion. This is not intended as a criticism of the dressing station or field hospital; to make more than a snap shot diagnosis, when a steady stream of wounded men is pouring into a dugout or tent, is out of the question. The first complete diagnosis must be made in the evacuation hospital, and on the admitting officer falls this heavy burden. With a sudden convoy of three or four hundred casualties arriving within a few hours, and from five to ten surgical teams in the operating rooms, it stands to reason that some of the wounded will have to wait several hours before their turn comes. The admitting officer must decide on the order of precedence. When a big battle is on there can never be enough surgical teams in an evacuation hospital to operate on all patients within twelve hours after admission. Fortunately for our wounded, the percentage requiring immediate limb or life-saving intervention is relatively small—probably not more than 20 per cent. These are the wounded that must reach the operating room immediately, regardless of the order of their admission or of the surgical service to which they are assigned.

Theoretically, and during relatively calm periods, each surgical team should examine its patients before they are admitted to the operating room; practically, this is not possible during an active "show." Each team is operating, dressing patients and snatching a few hours out of the twenty-four for meals and sleep. On the admitting officer must devolve a diagnosis of the relative urgency of each case, its confirmation by the fluoroscope (localization of foreign bodies, fractures) and the surgical preparation of the wound area by the ward orderlies and nurses. When in doubt as to the severity of a given case, etc., he can and should call in the aid of the consulting surgeon or chief of surgical services. While convoy follows convoy, and the operating teams are straining every ounce of strength in order to meet the demands placed on them, all surgical cases must be pooled, the only exception to this rule being those wounds demanding special technic in their treatment; the latter alone should be reserved for operation by teams previously trained and selected for that purpose. Such teams must be ready at all hours to operate when called on to do so.

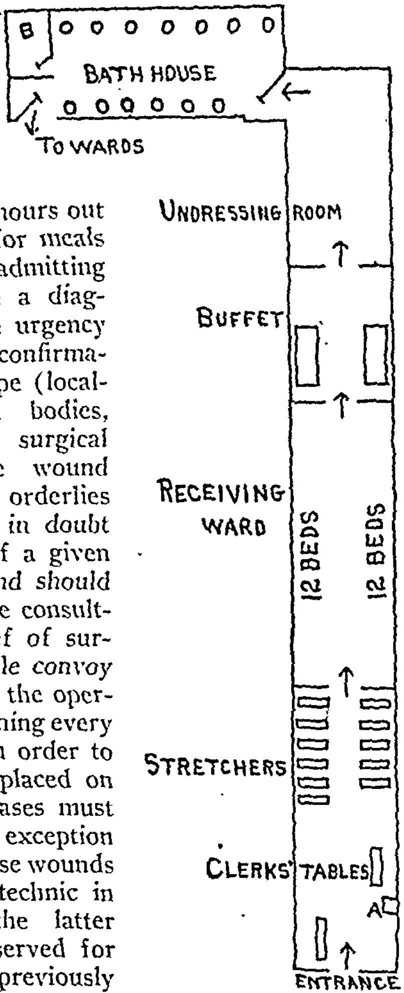


Fig. 2.—General plan of admitting section: *A*, table at which money, etc., may be deposited; *B*, clothing, pajamas, etc.

ADMITTING OFFICER AND *DIRECTOR OF SURGICAL MATERIAL*

Having supervised the admission of a convoy, and divided the cases into medical, slightly wounded and severely wounded, the admitting officer should devote his attention to the latter cases.

From the admitting tent all severely wounded pass directly into the receiving ward, where they are placed on specially prepared beds, undressed, deloused and washed by orderlies and nurses. In order to avoid contamination by lice, etc., the bed is first made up in the ordinary manner, and a sheet placed over the blanket. The patient is laid on the sheet covered by an extra blanket or two, undressed and cleansed *without* exposure of more of his body than is absolutely necessary. When he is ready for his pajamas, the extra top sheet and blankets are rolled away from under him and he is slipped under the regular coverings. The extra top sheet and blankets are taken to the delousing station and sterilized. Light diet is furnished from the buffet and given to all patients excepting those presenting intra-abdominal lesions or suffering from concussion or coma.

In shock cases, if very severe, the patients are not undressed at all, but heat is applied around their bodies, hot drinks are given them or they are transfused, either in the same ward or in a special room containing separate heat chambers (*cellules chauffantes*).

Having sorted the severely wounded into urgent surgical, observation and borderline cases, the admitting officer directs the former, in proper order, to the roentgen-ray room, where they are fluoroscoped, all fractures recorded and foreign bodies localized. All severe observation and borderline cases are assigned and transferred to the different surgical wards, special or general, where they are examined a second time by the chief of the surgical team and booked for operation during that team's shift. Should an operative emergency develop among these cases, the patient is immediately ordered to the operating room and operated on by one of the teams on shift at the time.

In order that all available data may reach the operating surgeon before or while the patient is being anesthetized, a duplicate clinical record of all severe cases is made out in the admitting tent. One copy goes to the registrar's office, in order not to delay the daily sick and wounded report, and the other, with the field card and roentgen findings, accompanies the patient to the operating room. The clinical records and field cards of the slightly wounded and medical cases are not made out in duplicate, both documents going from the admitting tent to the registrar's office, whence they are returned to the proper wards. Should another convoy arrive, as sometimes happens, before the first lot of wounded have been disposed of, the admitting officer has an assistant who replaces him in the admitting tent.

As soon as the disposal of the convoy has been determined, the admitting officer—now become director of surgical material—takes position near the operating barrack or tent, in order to keep in constant touch with the stretcher bearers, roentgen-ray and anesthetizing rooms, thus insuring a constant stream of wounded toward the operating rooms and preventing undue congestion at any point. Each squad of stretcher bearers is given its share of the list of operable cases, with their order of precedence; as each wounded man enters the operating barrack, the director verifies the name, diagnosis, etc., and checks them off his list. On completion of an operation, the name and ward number are checked off. As far as possible, a patient who has been operated on should be placed in the service of the operating team; practically this is not always possible while the pooling of cases is in force. Since, however, the operating sheet accompanies the patient, with the name of the surgeon written on it, it is a simple matter to follow the case up and make the proper transfer as soon as the intensity of the battle has abated.

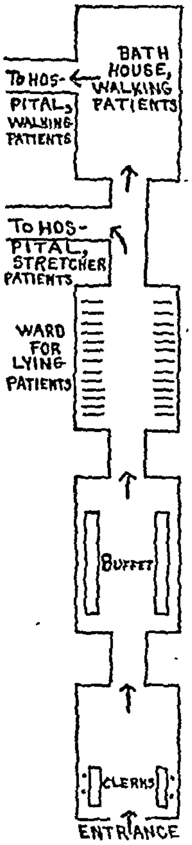

BATH HOUSE, WALKING PATIENTS
To HOSPITAL, WALKING PATIENTS
To HOSPITAL, STRETCHER PATIENTS
WARD FOR LYING PATIENTS
BUFFET
CLERKS
ENTRANCE

Fig. 3.—Another plan of an admitting section of an evacuation hospital.

In order to assure a better postoperative treatment of critical cases, a recovery ward is necessary; in it all of the surgical teams can follow their cases from day to day. A ward surgeon does all of the dressings in the recovery ward, subject to the orders or suggestions of the operating surgeon, who is required to be present during ward walk, in order not to disturb routine work.

SURGICAL DISPENSARY FOR WALKING WOUNDED

During a big "show," valuable saving of time is obtained by appointing a junior officer as dresser for all walking wounded. A section of tent is set aside for this purpose and equipped with sterilizer, instruments and dressings. The dispensary dresser is furnished with a daily list of walking wounded; the latter are sent for, ward by ward, an orderly being detailed for that purpose.

THE ADMITTING TENT BUFFET

Curiously enough, almost the first point to impress on a raw M. C. recruit—surgeon, nurse or orderly—is the all important fact that a wounded soldier is a disabled athlete and not a sick man. With few exceptions this is axiomatic. Casualties arrive at the evacuation hospital after having received a cursory dressing and immobilization, if necessary, in a regimental aid station or field hospital; they may have been fighting for hours or days with little or no time for regular meals; and a tiring meal-less trip of several hours in an ambulance precedes their arrival at the evacuation hospital, the first stopping place where they can get food, rest and radical treatment. I myself am convinced that a goodly percentage of the exhaustion from which they suffer is due to starvation. During the critical battles of this spring, it was no unusual event to receive wounded British and French soldiers who had fought and retreated for five or six days, living on stale bread or hard tack which they happened to have in their knapsacks or pockets. Regardless of the severity of their wounds, nine out of ten soldiers clamor for food before they are discharged from the ambulances. Both the French and British armies have long since recognized this condition and provided for it. The British buffet is always supplied with hot tea, well sweetened, bread, butter and jam. The French serve soup or "rata"—a composite stew of meat and vegetables with Pinard (wine). Soldiers with intra-abdominal lesions should, of course, be excluded from the buffet; practically they are the very ones who manifest no desire for food. While admitting the fact that the giving of nourishment to a patient who may shortly afterward require anesthetizing presents certain esthetic disadvantages, I have yet to see any harm caused by this war custom. Military surgery has given some of our most deeply ingrained surgical notions a rude jolt. The giving of food and omission of the sacramental preoperative purge are two of the least important. When one has seen hundreds of wounded men eating their fill at the buffet and then, deloused, washed up and clothed in clean pajamas, fall into their beds and into profound slumber, from which they awaken a few hours later strengthened and refreshed for their operative ordeal, there can be no further doubt as to the best procedure to follow. Food they must have, prewar notions to the contrary notwithstanding.

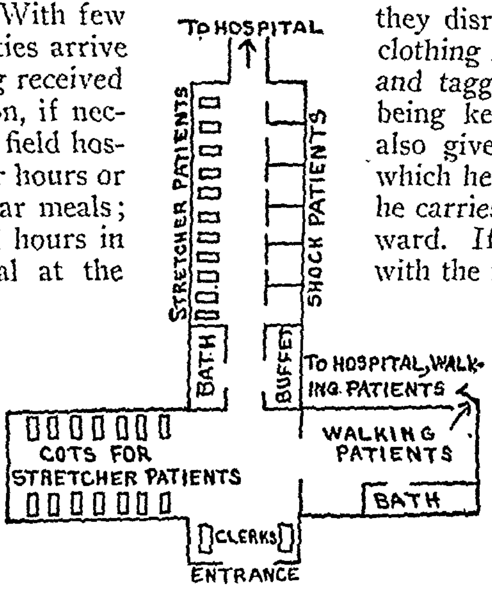


Fig. 4.—A third plan.

The buffet should consist of a section of tent or barrack with tables on each side of its long axis. One table holds tea, cocoa or chocolate, kept hot by means of a Primus lamp, and a sufficient quantity of cups and hot water to wash them in; the opposite table should have bread and butter, sandwiches, hash or some other hot dish. Two orderlies, under charge of a nurse, will suffice, one of the orderlies carrying trays to the stretcher patients.

All walking patients, after being taken up by the admitting clerk, pass directly to the buffet, receive their ration of food, and eat it sitting on rows of benches provided for the purpose. Cigarets are supplied at the same time. A wounded soldier who is not allowed to smoke, when so inclined, becomes an insurrecto on the spot.

THE DELOUSING AND BATHING BARRACK OR TENT

All walking wounded, having eaten and smoked, retire to a screened off portion of the buffet tent where they disrobe from head to foot and roll their clothing into individual bundles which are tied and tagged by orderlies, a duplicate number being kept by the patient. Each soldier is also given a small cotton "treasure" bag in which he places his small personal belongings; he carries this with him to the bath house and ward. If he desires to leave money or jewelry with the registrar, a receipt for it is given him before he leaves the admitting tent.

The equipment of the bathing tent or barrack will necessarily vary with the terrain and available sanitary resources. A pitcher of water, a basin and a cup of kerosene, with soap and towel, represent the essentials; shower baths with hot water are desiderata whenever obtainable.

Each man scrubs the hairy parts of his body thoroughly with the kerosene oil, and then uses soap and water. When dried, a suit of pajamas, pair of socks and slippers are donned and he is directed to his ward.

DIMENSIONS AND PLANS OF ADMITTING SECTIONS

For a 2,000 bed evacuation hospital, five tents or barracks, approximately 6 by 18 yards, will be required. Of these, one is used for admission, one for a buffet and undressing room, two for stretcher cases and one for a bathing room.

By the method of having all the wounded reach their respective wards or operating barrack deloused, cleansed and clothed in pajamas, an immense amount of time is saved and the routine work of orderlies and nurses is not hampered. Though not strictly necessary, a junior officer can be detailed to change all old or foul-smelling dressings in the admitting ward; walking patients should be dressed in the surgical dispensary.

The general plan of the admitting section will necessarily vary with the terrain and available resources of the evacuation hospital. The three herewith submitted have all been successfully used in British, French or American evacuation hospitals.

CONCLUSIONS

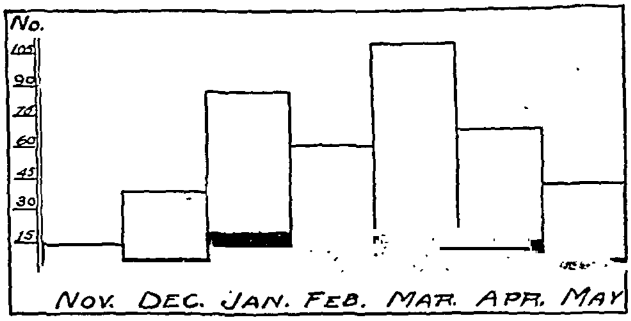
1. The general plan of admission is the result of observations made along the Franco-British front in 1917-1918; the details, as carried out in our hospital, and many original ideas embodied therein, should be credited entirely to Capt. J. D. Bruce, M. C.

2. If carried out, with omissions or additions suggested by divergent conditions of the battle front, the scheme will be found to be both time and life saving.

PNEUMONIA AT CAMP MEADE, MARYLAND

HENRY M. THOMAS, M.D. (BALTIMORE)
First Lieutenant, M. C., U. S. Army; Supervisor of Pneumonia Wards, Base Hospital
CAMP MEADE, ADMIRAL, MD.

From the opening of the base hospital, Nov. 1, 1917, to May 31, 1918, 421 cases of pneumonia have been diagnosed in the wards. Of these, 361 were diagnosed as lobar pneumonia and sixty as bronchopneumonia. We are doubtful as to the accuracy of this differential diagnosis, and in some cases such a differentiation was impossible. Cases with sudden onset, usually with a chill, rusty sputum, continuous high fever, and defervescence by crises between the fourth and tenth day were called lobar pneumonia without consideration of the distribution of pulmonary signs. In a few borderline cases the roentgen ray was of considerable help. There were undoubtedly a number of cases of bronchopneumonia or interstitial bronchopneumonia diagnosed as lobar pneumonia, and we were unable to correct this diagnosis except when the cases terminated fatally. The bacteriology was no help in making the diagnosis, for in two cases of bronchopneumonia and five cases of bronchitis, the Type II pneumococcus was isolated from the sputum. Of the sixty cases diagnosed as bronchopneumonia, only twelve followed measles (the other six measles pneumonias being entered in the record office as lobar pneumonia), and two followed scarlet fever.



Occurrence of pneumonia by months: totals in outline, deaths in black.

Our typical and usual picture of bronchopneumonia was: gradual onset with cough and general malaise often following a bad cold; temperature running an irregular course, usually from 1 to 3 degrees higher at night than in the morning; fever lasting from one to four weeks and ending by lysis; indefinite and variable signs of consolidation in the lungs, often rapidly migratory, and purulent sputum. Most of our forty-six cases were of this description, although there were a few "abortive" cases in which there were only a few days of fever but in which, when examined, definite signs in the lungs were found both clinically and by roentgenoscopy. Such cases, if neglected, might readily have progressed to the more severe type described above. The postmeasles cases were similar except for the extraordinary degree of cyanosis and highly purulent, sometimes salmon colored sputum.

Our figures, then, are only roughly correct from this point of view, but we strongly believe that these two diseases should be considered separately.

TABLE 1.—MORTALITY AMONG WHITE AND COLORED PATIENTS WITH LOBAR PNEUMONIA AND BRONCHOPNEUMONIA

	Number		Died		Mortality	
	White	Colored	White	Colored	White	Colored
Lobar pneumonia............	127	234	28	36	22.0%	11.1%
Bronchopneumonia..........	37	23	10	5	27.0%	21.7%
Total.....................	164	257	38	41	23.2%	15.9%
	421		79		18.7%	

The incidence of pneumonia among the colored troops was roughly eight times as great as among the white troops, there being only about 7,000 colored troops to 35,000 white troops in camp.

In the middle of February a different clinical and bacteriologic picture made its appearance, comprising about ten cases in all. These patients showed marked prostration early in the course, were apprehensive, and were very ill. The physical signs were those of consolidation of one or the other of the lower lobes. As the disease progressed, the percussion note was observed to become flat, and on performing thoracentesis, fluid in quantities varying from a few cubic centimeters to 1 or 2 liters was obtained. This fluid was thin, slightly cloudy, dirty orange colored and usually contained relatively few cells and organisms. The organisms were always found to be *Streptococcus hemolyticus*. Early operation yielded unsatisfactory results, and repeated aspiration succeeded in curing only one case. The procedure finally adopted was aspiration, followed in one or two days by rib resection low in the chest wall under local anesthesia, and the substitution of neutral solution of chlorinated soda for the pleural exudate slowly and only after any shock incident to the operation was recovered from. Four of these cases coming to necropsy showed interstitial bronchopneumonia as described perfectly by Kaufman and noted first in this country by Mathers[1] in his study of a series of cases of pneumonia of atypical cases occurring during and following attacks of grip in 1915-1916. He showed the presence of *Streptococcus hemolyticus* in the sputum and lungs of practically all these cases. Cole and MacCallum[2] have described these cases following measles in the soldiers at Fort Sam Houston, Texas. It is interesting to note that measles was not recognized in any of our cases. The sputum studied in five such cases yielded the Type IV pneumococcus in one and the streptococcus in four (hemolysis was not tested). There were other cases of atypical pneumonia in which the sputum yielded the streptococcus; but without mouse inoculation we are not prepared to say what importance this organism should be given.

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[1] Mathers: Tr. Chicago Path. Soc., April 1, 1916.

[2] Cole, Rufus, and MacCallum, W. G.: Pneumonia at a Base Hospital, THE JOURNAL A. M. A., April 20, 1918, p. 1146.

During December the sputum of fifteen cases of lobar pneumonia was studied, after which time no more mice were available. These cases all yielded the pneumococcus and none the *Streptococcus hemolyticus*, indicating that at that time the *Streptococcus hemolyticus* was not playing an important rôle in the etiology of pneumonia.

Beginning Feb. 15, 1918, every available sputum was studied by the Avery technic. It is interesting to note that there were certain cases in which no sputum suitable for examination could be obtained, although every effort was made to procure it. We are inclined to believe that they belong to the streptococcus group. In cases in which good sputum was to be had, the Avery technic was altogether satisfactory for the determination of pneumococci when present, and in conjunction with cultures of the sputum directly on blood agar plates made fairly reliable substitute for mouse inoculation. However, mouse inoculation has proved most desirable in the study of sputum in cases in which pneumococci were not present in abundance or when other organisms were to be designated as the causative agent.

TABLE 2.—SPUTUM BACTERIOLOGY, FEB. 15 TO MAY 31, 1918

	Lobar Pneumonia							
Type	I	II	II+	III	IV	Strepto-coccus*	Undeter-mined†	Total
Number	57	26	11	0	27	25	13	159
Per cent.	36.2	16.3	6.8	0.0	16.7	15.7	8.1	100
Died	3	5	2	0	6	2	2	20
Mortality	5.3	19.2	18.2	0.0	22.2	8.0	15.4	12.5
	Bronchopneumonia							
Number	0	0	2	0	9	14	3	29
	Bronchitis							
Number	0	3	2	0	4	10	0	19

* Cases in which the streptococcus was the prevailing organism in the Avery tube after five hours' incubation. Hemolysis was not determined. Many of these sputum specimens were of very poor quality and probably did not yield the etiologic organism.

† For a short period, bile tests were not used, and therefore some of these cases were probably Type IV pneumococcus.

In only one case of pneumonia from which a type pneumococcus (Type I) was isolated from the sputum did streptococcus empyema develop. We take this to indicate that the coexistence of these two organisms was rare in our series.

We are unable to say in what proportion of cases *B. influenzae* occurred. It was seen several times in lobar pneumonia and bronchopneumonia, and doubtless occurred frequently; but during that time our attention was turned toward discovering and treating with serum the Type I pneumococcus cases, and our laboratory staff was not large enough to permit of extensive studies. We did not find *B. influenzae* alone in any case, and doubt its significance in the instances in which it was noted.

PNEUMONIA FOLLOWING MEASLES AND SCARLET FEVER

During the period covered by this report there occurred 316 cases of measles, in eighteen, or 5.7 per cent., of which, pneumonia developed. From the pleural fluid of five empyemas occurring in these cases the hemolytic streptococcus was isolated in four, and the organism was undetermined in the fifth. Of the twelve cases of measles terminating fatally, all were complicated by pneumonia and four also by empyema. In none of these cases was necropsy performed.

The sputum from four postmeasles cases was studied for the pneumococcus. A Type IV pneumococcus was found in three of them and no pneumococcus in the other one. This organism may possibly have a place in the etiology of the pneumonia, but the hemolytic streptococcus found in the pleural exudate is much more reliable evidence. Weichselbaum[3] called attention to the fact that the streptococcus may be present in the lung of a patient dying from pneumonia. The thought occurred to us that very possibly a streptococcus entering the lung as a secondary invader might outgrow the pneumococcus, especially in pleural exudates, and give rise to confusion.

TABLE 3.—MORTALITY IN MEASLES AND POSTMEASLES PNEUMONIA OCCURRING DURING THE SEVEN MONTHS COVERED BY THIS REPORT

	Number		Died		Mortality	
	White	Colored	White	Colored	White	Colored
Measles	243	73	10	2	4.1%	2.7%
Postmeasles pneumonia	15	3	10	2	66.6%	66.6%

From 147 cases of scarlet fever, three cases of pneumonia developed, all of which were complicated by streptococcus empyema. The one specimen of sputum examined yielded a Type IV pneumococcus.

Four patients developed scarlet fever while convalescing from pneumonia, one of whom suffered from streptococcus empyema.

TABLE 4.—MORTALITY IN SCARLET FEVER AND PNEUMONIA FOLLOWING SCARLET FEVER

	Number		Died		Mortality	
	White	Colored	White	Colored	White	Colored
Scarlet fever	147		4		2.7%	
Pneumonia following scarlet fever	3	0	2	0	66.6%	

The incidence of pneumonia following measles and scarlet fever is of peculiar interest at the present time. Scarlet fever is characterized above all other features by its complications, which are almost invariably streptococcal infections; this organism can usually be found in the throat. Pneumonia followed scarlet fever in 2 per cent. of the cases and measles in 5.7 per cent. This would seem to throw some doubt on the importance of the presence of streptococci in the throat flora of measles-pneumonia.

COMPLICATIONS

Of the complications, empyema was by far the most frequently observed.

TABLE 5.—INCIDENCE AND BACTERIOLOGY OF EMPYEMA FOLLOWING LOBAR PNEUMONIA AND BRONCHOPNEUMONIA

	Number	Empyema	Pneumo-coccus	Strepto-coccus	Unknown
Lobar pneumonia	361	22	14	5	2*
Bronchopneumonia	60	18	1	13	4
Unknown lung condition	11	11	0	11	0
Total	432	51	15	29	6

* The staphylococcus was obtained from one case of empyema following lobar pneumonia.

The cases classed as of an unknown lung condition include cases in which empyema was the first chest condition noted. Two followed measles, two scarlet fever, two tonsillitis, one peritonsillar and one inguinal abscess, probably all having some changes in the lung, either bronchopneumonia or interstitial bronchopneumonia. The remarkably high percentage of empyemas following bronchopneumonia is probably due to the fact that the streptococcus was the organism causing, or at least playing a large part in, the infection.

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[3] Weichselbaum: Med. Jahrb., 1886, p. 550.

The mortality of the pneumococcus empyemas was 40 per cent.; that of the streptococcus empyemas 41.3 per cent.

Two cases of lung abscess were seen following pneumonia, in one of which the patient recovered after operation.

Meningitis complicating pneumonia occurred four times, and was in all cases due to the pneumococcus and always followed lobar pneumonia. These four patients died.

Otitis media was reported in only three cases.

Purulent pericarditis developed in five cases, all of which terminated fatally. The streptococcus was grown from one of the exudates.

Acute nephritis was seen in postmortem examinations in one case, but albuminuria associated with casts occurred quite frequently, clearing up quickly during convalescence.

Pulmonary tuberculosis in patients suffering with pneumonia was diagnosed five times, three of the patients recovering from their pneumonia and returning temporarily to their commands.

Sixteen cases of pneumonia came to necropsy. Four were cases of lobar pneumonia, two of which were complicated by meningitis and one by pulmonary tuberculosis. Eight were of the type of bronchopneumonia usually seen, and four of these patients also had empyema. Four were of interstitial bronchopneumonia complicated by empyema from which the *Streptococcus hemolyticus* was isolated. One of these patients had scarlet fever; the other three cases were apparently preceded only by bronchitis.

TREATMENT

The treatment of all pneumonias was systematized to a certain extent, each patient receiving a course of digitalis and other ordinary routine measures.

All the Type I pneumococcus cases were treated with serum as soon as the organism was ascertained. The Rockefeller hospital technic was followed as closely as Army hospital conditions permitted. In fifty cases treated we have seen nothing which could be construed as harmful effects from serum. Mild anaphylactic reactions were not uncommon but never dangerous, and no lasting complications resulted.

TABLE 6.—TYPE I LOBAR PNEUMONIA

	Number	Died	Mortality
Treated	50	3	6%
Untreated	7	0	0%
Total	57	3	5.3%

The seven untreated patients had their crisis before the type pneumococcus could be determined, either from technical difficulties in the laboratory, or because the patients were seen late in the course, or because the crisis occurred early in the disease.

The three cases that terminated fatally were of the most unfavorable kind, and it seems to us unfair to ascribe these deaths to failure of the serum. One patient had a history of active pulmonary tuberculosis for two years, during which time he had been unable to do any work. At necropsy an advanced pulmonary tuberculosis with cavity formation was found; this condition, while suspected, had been demonstrated only a few days before death. Another patient had been ill five days before entering the hospital, and before treatment could be started had had pulmonary edema for thirty-six hours. The third patient was operated on for empyema on the second day of his pneumonia, shortly after which procedure treatment was instituted. After several days of treatment his temperature remained low and he was apparently recovering. Ten days after the operation, however, he suddenly developed meningitis and died within twenty-four hours. Gram-positive cocci were seen in smears from the spinal fluid, but cultures failed to grow.

We are much impressed by the fact that the earlier in the disease serum treatment was begun the more reliable and prompt was the effect. Cases treated on the second or third day practically never required more than three doses of serum, while our most obstinate cases were treated first on the sixth or seventh day and required more than ten treatments apiece. Crisis on the second, third and fourth day was very frequent among our treated cases of Type I pneumonia and infrequent among the other cases. In the untreated cases of Type I pneumonia, however, there were one or two which showed early crisis—enough, in fact, to prevent our drawing any definite conclusions from this one fact alone.

TABLE 7.—DISTRIBUTION OF LOBAR PNEUMONIAS AMONG THE COMPANIES OF THE THREE HUNDRED AND SIXTY-EIGHTH INFANTRY

Company	B	O	D	E	F	G	I	K	L	M	Hdqs.	Mach. Gun
	IV	S	S	S	II+	IV	IV	S	I	I	I	S
	II	II+	I				S		S	I	I	II
			IV				S		I	I	S	I
			IV				I		I	I		
							I		II	II+		
							I		I	II+		
							I		IV	S		
							S		I	I		
							II+		II+	I		
									I	II+		
Total	2	2	4	1	1	1	9	1	10	10	3	3

The patient mentioned above as dying of meningitis and one other patient who developed streptococcus empyema are the only instances of complications arising in our serum-treated cases.

It seems clear that the general mortality of lobar pneumonias during the period of typing (from February 15 to May 31) was kept as low as 12.5 per cent. by the low mortality in the Type I cases, which comprised 36 per cent. of this total. The part played by the serum is questionable; but the least we can say is that the results are very suggestive.

From the epidemiologic point of view only one regiment yields anything worthy of study. There occurred in the Three Hundred and Sixty-Eighth Infantry, composed of colored troops from Tennessee, forty-seven of the 157 typed lobar pneumonias. The remaining cases were nearly equally distributed among the other regiments of the camp and Laurel Encampment. Table 7 shows the distribution of these forty-seven cases in the regiment.

SUMMARY

The large majority of cases of pneumonia seen at Camp Meade during the past year were typical cases of lobar pneumonia.

The colored troops were much more liable to pneumonia than the white troops, but their mortality was only two-thirds as great as the white troops. The morbidity may be partially explained by the fact that most of the colored troops were from Tennessee, while the white troops came from Maryland and Pennsylvania.

Primary bronchopneumonia or pneumonia following bronchitis is considered a very rare disease in adults. We saw forty-six cases of bronchopneumonia which did not follow measles or scarlet fever or general anesthesia. They presented a fairly distinctive clinical picture. Empyema was a very frequent complication, and from all but two of the pleural exudates a hemolytic streptococcus was isolated.

I wish to emphasize the importance of early recognition of mild cases of bronchopneumonia so frequently passed over as bronchitis. These patients, if not put to bed, may go on to a severe illness.

The cases of interstitial bronchopneumonia seen by us were not in measles patients. One patient had scarlet fever for six days before fluid was detected. They presented a somewhat different picture of sudden onset, generally with a chill, great prostration, nervousness and apprehension. Early and rapid accumulation of fluid which had a typical, thin, cloudy appearance was the rule. The hemolytic streptococcus was recovered from these cases.

The percentage of postmeasles pneumonia, while relatively small (5.7 per cent.), was nearly three times as large as pneumonia following scarlet fever (2 per cent.). I feel that this point is not one to be overlooked in the study of the rôle of the streptococcus in pneumonia.

Serum treatment of Type I cases apparently yielded excellent results. I believe that the mortality was lessened, the febrile period shortened and the number of complications reduced by its use.

Type II pneumococci were recovered from the sputum of several patients suffering from bronchopneumonia and bronchitis. As far as I know, these patients had not come in contact with Type II pneumococcus pneumonia cases.

SERUM TREATMENT OF TYPE I PNEUMONIA

OCCURRING IN ASSOCIATION WITH AN EPIDEMIC OF INFLUENZA

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The epidemic of influenza that has passed through Camp Devens has led to a large amount of laboratory investigation, which will be the subject of a future report. It is sufficient to state that *Bacillus influenzae* of Pfeiffer has been established as the etiologic factor in this epidemic. Incident with the rise in the number of cases of the disease, pneumonia, clinically atypical from the classical acute lobar pneumonia, became very prevalent.

A small number of these were demonstrated to be due to *B. influenzae* alone. That many of them were not purely an influenzal process was shown by bacteriologic study of necropsies. Of the patients showing clinical signs of pneumonia, the usual percentage of Type I pneumococci was demonstrated in the sputum (approximately 20 per cent). Blood cultures during life revealed the same type in eight cases.

Since both the influenza bacillus and the pneumococcus were demonstrated so frequently in the sputum of these cases, some doubt arose as to the advisability of treating this mixed infection with an antipneumococcus serum. It is the purpose of this report to state briefly the effect of Type I serum in these cases.

Before the epidemic, serum of low titer (Squibb's) was used in the treatment of typical Type I lobar pneumonias. In this group nineteen recovered and five died—a mortality of 20 per cent. During the epidemic, with essentially the same treatment, thirty-one recovered and twenty-three died, a mortality of 43 per cent. In the height of the epidemic, the laboratory received a supply of high titer serum (Rockefeller). Under careful administration, fourteen patients recovered or are well on the way to convalescence, and one has died—a mortality of 7 per cent. The mortality of Type II was 50 per cent. (two of four patients) before, and 62 per cent. during the epidemic (thirteen of twenty-one patients).

The accompanying table is self-explanatory:

TREATMENT AND RESULTS IN TYPE I PNEUMONIA

Before epidemic:	Recovered, No.	Died, No.	Mortality, Per Cent.
Treated with low titer serum	11	4	27
Complicated by influenza epidemic:			
Treated with low titer serum	12	13	..
Treated first with low titer serum, high titer serum being substituted late in the disease	5	6	..
	17	19	53
Treated with high titer serum	14	1	7

It is not to be assumed that the figure of 53 per cent. represents in any sense the mortality of the pneumonia patients in this epidemic; it applies only to the more seriously ill who were selected for typing, since it was not feasible to type all the patients.

The one patient dying after treatment with high titer serum was admitted to the hospital after an illness of two weeks, in an extremely critical condition.

Not infrequently a moderate elevation of temperature (102 F.) persisted after the administration of liberal quantities of high titer serum (500 c.c.); under these circumstances the injections were usually discontinued, it being assumed that the temperature was probably due to *B. influenzae* or to some other organism than the Type I pneumococcus. A few of the patients improved promptly and definitely soon after the administration of serum; in the majority the improvement was gradual; some remained seriously ill for several days before convalescence began.

It seems inevitable that a certain number of patients must react more or less severely shortly after the injection of serum, especially if it is not carefully prepared. These reactions apparently produce more exhaustion of the patient than might conceivably be caused by moderate exercise. Such reactions can be justified only by the use of high grade serum producing definite and specific benefit to the patient.

SUMMARY OF RESULTS

1. A normal number of Type I pneumococcus pneumonias were found complicating or following influenza.
2. The mortality in this group, when treated with serum of low titer during their entire course, or only in the last stages with high titer serum, was approximately double that similarly treated before the epidemic.

3. An unusually high mortality in Type II cases of pneumonia was found during the epidemic of influenza.

4. Patients treated with high titer serum during the entire disease showed a mortality of only 7 per cent.

5. It is considered inadvisable to inject pneumonia patients with large quantities of low grade serum.

TREATMENT OF INFLUENZA PNEUMONIA BY THE USE OF CONVALESCENT HUMAN SERUM

PRELIMINARY REPORT

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We are all aware of the high degree of fatality resulting from the pneumonia following the influenza of the present epidemic. All of our deaths have been due to the pneumonia complication and none to the influenza as such. Here at the Naval Hospital, the percentage in the first groups reached as high as 50 or 60, and more recently the mortality has dropped to 30 per cent. No doubt this complication will continue to give a high mortality rate, especially when the disease invades new territory. For this reason, we have decided to publish our results in the treatment of a small group of cases, by the use of serum from patients convalescing from pneumonia, following an attack of influenza. It will be readily seen that a complete report at this time is out of the question, but we hope to present sufficient data to indicate the possibility in the use of convalescent serum so that further work can be carried on in territory where the disease is now active, and where proper equipment is at hand to carry out the necessary laboratory details.

Our observation and treatment of more than 400 cases of influenza pneumonia in this hospital has afforded opportunity to compare the various methods of treatment with a fair degree of accuracy.

The use of serum from convalescent influenza pneumonia patients was suggested by the junior writer as possibly having curative value, because of probable antibody content. The reason for this was the experimental evidence presented by Flexner and Lewis[1] with convalescent serum from poliomyelitis patients, and later the clinical evidence presented by Amoss and Chesney[2] during the poliomyelitis epidemic in 1916.

The serum was first tried on two patients, an officer and a nurse, with a very severe and extensive bronchopneumonia.

Case 1.—The officer developed influenza, September 23. On the 26th, he had some evidence of a beginning bronchopneumonia. The temperature was 103; there was some elevation of pulse and respiration. On the 28th, he was desperately ill; the temperature was 104.4, respiration, 36, and pulse 104. He had considerable nausea and vomiting, looked toxic and had beginning cyanosis and vasomotor disturbances; also a profuse sanguinopurulent expectoration. One hundred c.c. of serum were given at 1:30 p. m., and another 100 c.c. at 8 p. m. The next morning, the 29th, the patient was distinctly improved; there were less nausea, cough and expectoration; the temperature was 102, respiration 40, and pulse 104. Seventy-five c.c. of serum were given at 11:30 a. m. On the 30th, a decided improvement was noted. At 8 a. m. the temperature was 100.8, respiration 30, and pulse 88. Seventy-five c.c. of serum were given; the temperature was normal at 4 p. m. The patient was in excellent condition, stating that he felt well. He made an uneventful recovery. The laboratory report of sputum injected into the peritoneum of a mouse showed influenza bacilli and Type IV pneumococcus.

Case 2.—The nurse took sick with influenza, September 24. On the 27th, she had a continuous temperature of 103, respiration 36, and pulse 104. On the 29th, the temperature reached 104, respiration and pulse were the same. Areas of bronchopneumonia were present, especially in the right middle lobe. The patient was very toxic; she was unable to keep anything on her stomach for three days. Water was given by rectum. Marked cough and mucopurulent expectoration were present. At 11 a. m., the 29th, 100 c.c. of serum were given. On the morning of the 30th, the patient ate some breakfast and was much improved, although very ill; the vomiting had practically stopped. The temperature was 103, pulse 114, and respiration 22. Seventy-five c.c. of serum were given. October 1, the temperature was normal; all symptoms subsided and she made an uneventful recovery.

Up to the present time, thirty-seven cases in all have been treated with serum. This represents all the pneumonia patients who have been admitted since October 1, except the officer and nurse previously mentioned. Of this group, thirty are convalescent; six are under treatment; one is dead. Of the six under treatment, two are much improved; two have received only one injection of serum; two patients are not improved, one of whom is critically ill. Of the thirty convalescents, eight received treatment on the second day of the pneumonia; fifteen on the third day; four on the fourth day, and three on the sixth day. Of the six under treatment, three received serum on the second day; two on the third day, and one on the fourth day. The patient who died received the first serum on the fifth day.

SERUM TREATMENT

Convalescent patients were bled as soon as convalescence was well established, the majority within a week or ten days of a drop to normal temperature. The serum was given as early as the diagnosis of the pneumonia complication could be made, so there has been no doubt about the lung involvement. The dose of serum has varied from 75 to 125 c.c. intravenously, and the interval between doses has varied from eight to sixteen hours.

Treatment was continued until there was no doubt about the recovery of the patient. The majority received about 300 c.c. Three received only 100 c.c., and two received from 600 to 700 c.c. It was found, as we anticipated, that there was a marked difference in the potency of the convalescent serum. At least ten out of seventy serums had no effect on patients. Under these conditions, the succeeding doses of serum were from other patients. Results from this serum are usually obtained in the first twenty-four hours after its use. If no results are obtained by this time, the serum from another donor should be used. An attempt was made to judge the potency of the serum by the amount of the lung involvement. This was done by obtaining a careful statement of the physical findings and the clinical course of the disease in the donors.

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[1] Flexner, Simon, and Lewis, P. A.: Experimental Poliomyelitis in Monkeys, The Journal A. M. A., May 28, 1910, p. 1780.

[2] Amoss, H. L., and Chesney, A. M.: Jour. Exper. Med., 1917, 25, 581.

PROCEDURE

Wassermann tests were made on all donors as soon as possible in order not to waste time on bleeding those who showed a positive reaction.

Compatibility tests of donors' serum, with recipients' corpuscles, was made as soon as new cases appeared in the ward. Then usually from ten to fifteen serums were tested against the corpuscles of each recipient in order to have plenty of available serum for complete treatment.

Blood to the amount of about 800 c.c. was taken from each donor, under sterile precautions, 400 c.c. at a time on two successive days. Thus each donor yielded about 300 c.c. of serum. The blood was allowed to clot at room temperature for about an hour; then plate cultures were made, and the containers placed on ice over night. The separated serum was cleared by centrifugalizing at high speed, then bottled, and in most cases given the same day. Tricresol (0.3 per cent.) was used only in serum kept over twenty-four hours. It is interesting to note that only four patients had chills after the serum injections. All of these received serum containing tricresol, while three others receiving tricresolized serum gave no such reaction. At no time has a donor been inconvenienced by the withdrawal of the foregoing amount of blood. In fact, the majority wanted to give more.

An attempt has been persistently made to test the potency of the serum of the donors by complement fixation and by gross agglutination, using the recently isolated influenza bacillus as an antigen; but as yet we have found no method of testing the antibody content of serum except by its clinical action on recipients.

SUMMARY AND CONCLUSIONS

Treatment of influenza patients with the pneumonia complication by the use of convalescent serum was started at this hospital, Sept. 28, 1918.

Up to the time of writing, thirty-seven pneumonia patients have been treated. Of this group, thirty are convalescent; six are under treatment; one has died; all but one of these have a favorable outlook.

At present, the potency of the convalescent serum can be tested only by its clinical effect. Further attempts are being made to titer the serum.

Experience shows that the most beneficial results will be obtained by giving the proper serum within the first forty-eight hours of the pneumonia complication.

It has been our observation that the virulence of the organism has decreased in this hospital as the epidemic progressed; but making allowance for this diminution in severity of the pneumonia cases, it is believed that the serum from convalescent influenza pneumonia patients has a decided influence in shortening the course of the disease and in lowering the mortality.

This treatment requires the cooperation of a well equipped laboratory, where the proper laboratory procedure, as previously noted, can be performed, and should be used only by those who are prepared to have this necessary laboratory work carried out.

U. S. Naval Hospital.

Keep Wounded Quiet.—Since any sort of activity increases the demands of the tissues for extra oxygen, every care should be exercised to keep wounded men quiet. The tissue or cellular acidosis will thus be reduced to a minimum.—*Review of War Surgery and Medicine.*

DERMATOLOGY IN A BRITISH GENERAL HOSPITAL IN FRANCE [*]

INCLUDING THE DIFFERENTIATION OF "I. C. T." (INFLAMMATION CONNECTIVE TISSUE)

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A year has now elapsed since this unit of the American Army took charge of this large British Hospital in France, and it will prove interesting to give in some detail the dermatologic phase of the work.

The dermatologic department consists of a hut containing forty-eight cots, and three tents, the largest holding forty and each of the others twenty; the four wards have a capacity of 128 patients. The bathing arrangements consist of four baths, two for scabies in a separate building, and one each for the transient venereal patients and the other skin cases, each in a separate room. Adequate sterilization is carried out for these patients' clothes. The staff consists of the officer in charge, a noncommissioned officer and two, occasionally three, enlisted men.

TABLE 1

Condition	No.	Condition	No.
Abscess	50	Lupus erythematosus	1
Angioneurotic edema	3	Lupus vulgaris	1
Acne	5	Molluscum contagiosum	1
Acne varioliformis	2	Pityriasis rosea	10
Alopecia areata	3	Psoriasis	26
Boils	381	Pompholyx	2
Callositas	8	Papilloma	2
Carbuncle	7	Purpura	5
Dermatitis herpetiformis	1	Pediculosis corporis	10
Dermatitis	35	Pediculosis pubis	8
Epithelioma	2	Pernio (frost bite)	50
Erythema multiforme	4	Paronychia	3
Erythema nodosum	1	Seborrhea	5
Erythema (toxic)	7	Sycosis vulgaris	4
Eczema	51	Scabies	510
Eczema seborrhoicum	6	Septic ulcer	210
Ecthyma	209	Schoenlein's disease	1
Erysipeloid	1	Syphilis (secondary)	37
Folliculitis	5	Syphilis (late)	15
Herpes simplex	1	Tinea circinata	2
Herpes zoster	18	Tinea cruris	6
Hyperhidrosis	56	Tinea versicolor	3
Ichthyosis	4	Tinea sycosis	5
Impetigo	122	Urticaria	7
Keratosis palmaris et plantaris	1	Vitiligo	2
Keloid	1	Von Recklinghausen's disease	1

There have been 1,913 skin cases treated during the twelve months period. This number does not include the 462 patients who remained here one or two days en route to venereal hospitals. This total also does not take count of many cases of urticaria and toxic erythema that developed in patients admitted to the hospital with other conditions; the toxic erythema has been chiefly observed following the injection of antitetanic serum. The very large number of patients admitted as battle casualties only a few hours from the battle line showing pediculi in their clothing or "nits" on the pubic and axillary hairs are also not included in the total just mentioned. As an example of the prevalence of "nits" on the hairs (pediculosis pubis), a few days following the admission of a large number of battle casualties, I examined 200 patients, of which number 190 showed ova.

Table 1 gives the variety and number of cases of each skin condition treated.

In a war in which millions of men are involved and in which there are of necessity thousands of wounded and sick, certain class names have been given to various diseases, and their correct differentiation remains for elucidation to the specialist in the line to which the name is applicable. This differentiation frequently, because of the haste required in evacuation nearer the line, remains to be carried out in a base hospital or in some special center.

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[*] From the Skin Department of No. 16 (Philadelphia, U. S. Army) General Hospital, B. E. F.

To an American dermatologist one of the most interesting class terms used in the present war is "I. C. T." (inflammation connective tissue), the synonym of the American Army term "pyodermia." These so-called I. C. T. cases are eventually weeded out into their proper nomenclature, in the event that a trained dermatologist is present at their final destination. Like so many class terms, however, I. C. T. is frequently used to cover a diagnosis so diametrically opposite from the original intention that a dermatologist's opinion is absolutely necessary.

Out of the 1,913 skin cases admitted to this hospital during the last twelve months, 995 have borne the diagnosis of I. C. T.

Table 2 shows these I. C. T. cases differentiated into their proper nomenclature.

TABLE 2.—DIFFERENTIATION OF I. C. T. CASES

Condition	No.	Condition	No.
Abscess	50	Folliculitis	10
Ecthyma	170	Hyperhidrosis	50
Septic ulcer	210	Pernio (frost bite)	25
Boils	211	Callositas	12
Scabies	86	Herpes zoster	2
Carbuncle	5	Pityriasis rosea	1
Dermatitis	17	Tinea versicolor	1
Impetigo	139	Syphilis (late)	6

Several hundred other cases diagnosed as I. C. T. on the "field card" have been excluded from this review as they comprised purely surgical conditions, such as gangrene of the feet, advanced stages of so-called trench foot, bone felon, necrosis of the bone, deep seated carbuncles, abscesses, and flesh wounds of various types.

Several points should be particularly emphasized in our review. First, many skin conditions may be treated over a considerable period without avail, either because of improper medication or because of an incorrect diagnosis. The latter point is well exemplified, as twenty cases of syphilis, eight in the second stage and twelve showing late skin lesions, were admitted to the hospitals improperly diagnosed.

Scabies also under war conditions is very different from that seen in civil practice, as the hands, and not infrequently the wrists, show little or no eruption, and pus complications are extremely frequent. Ecthyma, which occurs very rarely in private dermatologic practice and which is seen only in the poorest and most unkempt type of dispensary patient, is here very prevalent. Septic ulcer is another war complication that is of frequent occurrence and starts primarily with a mild trauma and is not infrequently observed on the feet, often over the Achilles tendon.

Emphasis should be laid on the fact that greater care is required in diagnosing between active and nonactive lesions of the skin. In numerous instances, patients have been sent to the hospital showing only pigmented marks (stains) on the skin, those areas signifying merely that inflammatory lesions had been present but that the active quality (redness) had entirely disappeared; following severe inflammations it may require many weeks for the stain entirely to disappear.

War dermatology, as consulting these tables plainly shows, consists chiefly of animal parasitic diseases and their complications. Exposure, skin trauma, and vegetable organisms are responsible for a large toll.

CONCLUSIONS

All diseases of the skin, exclusive of uncomplicated cases of scabies, and pediculosis, should be treated in areas where dermatologic advice is available.

All patients with skin diseases requiring prolonged treatment should be sent to special hospitals or to special wards in designated hospitals where they will be under the care of a dermatologist.

Many wounded and sick patients have skin diseases which may be of unusual types, such as late manifestations of syphilis, or rare conditions. A dermatologist subject to call under such conditions is indispensable.

New and Nonofficial Remedies

THE FOLLOWING ADDITIONAL ARTICLES HAVE BEEN ACCEPTED AS CONFORMING TO THE RULES OF THE COUNCIL ON PHARMACY AND CHEMISTRY OF THE AMERICAN MEDICAL ASSOCIATION FOR ADMISSION TO NEW AND NONOFFICIAL REMEDIES. A COPY OF THE RULES ON WHICH THE COUNCIL BASES ITS ACTION WILL BE SENT ON APPLICATION. W. A. PUCKNER, SECRETARY.

BENZYL ALCOHOL.—Phenmethylol.—Methylhydroxy Benzene.—$C_6H_5CH_2OH$.—An aromatic alcohol occurring as an ester in tolu and other balsams, and also produced synthetically by various processes.

Actions and Uses.—Benzyl alcohol is now being used as a local anesthetic by injection and on mucous membranes. It is said to be practically nonirritant and nontoxic in the ordinary concentrations and doses.

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Benzyl alcohol is a colorless liquid with a faint aromatic odor, and a sharp burning taste. When placed on the tongue it produces numbness, even in very small quantities. It is soluble, 1 Cc. in 25 Cc. water, and miscible in all proportions with alcohol, ether, and chloroform.

Benzyl alcohol boils without decomposition between 200 and 206 C. When ignited it burns with a smoky flame.

It has a specific gravity of from 1.040 to 1.050 at 15 C., and 1.032 to 1.042 at 25 C.

Benzyl alcohol is neutral to litmus. If 2 or 3 *drops* are added to a *strong solution* of potassium permanganate acidulated with sulphuric acid, rapid oxidation takes place and the odor of benzaldehyde is plainly evident. On heating the mixture further oxidation takes place and then by adding dilute sulphuric acid and decolorizing the mixture with hydrogen dioxide, benzoic acid may be obtained by extracting with ether.

When volatilized in a Bunsen flame from an oxidized copper wire, no green color should be imparted to the flame (*chlorinated products*).

If 5 Cc. are shaken with 5 Cc. sodium hydroxide solution (5 per cent.) and allowed to stand one hour, no yellow color should appear in the aqueous layer (*aldehyde*).

Ten Cc. benzyl alcohol should leave no weighable residue on evaporation and heating until all carbon is burned away.

Phenmethylol-H. W. & D.—A nonproprietary brand of benzyl alcohol complying with the tests and standards for benzyl alcohol.

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SATURDAY, OCTOBER 19, 1918

THE BACTERIOLOGY OF MEASLES

In view of the deep concern felt in regard to measles since the recent experiences in our military camps, the summary in The Journal last week[1] of the literature on the bacteriology of this disease and its complications is of timely interest. It is evident that much of the work, especially the earlier, now has no value except possibly in a historical sense and as illustrative of the by-products of the development of bacteriologic science. The three bacteria that stand out as of most importance in connection with measles and its complications at this time appear to be the streptococcus, the influenza bacillus (using these names in a general sense) and the coccus recently discovered by Tunnicliff in the blood in the very early stages of measles and in the throat and nose. Of course, the pneumococcus, the diphtheria bacillus, the staphylococcus, etc., may cause complicating infections occasionally in measles, but so far as we know now not much oftener than in other acute infectious diseases.

The Tunnicliff coccus is a new factor, the exact significance of which is to be determined. At present it represents "the mysterious stranger" in the bacterial groups associated with measles. It may be the cause of the disease itself—it occurs in the blood even before the rash, and the patient responds to its presence by producing specific antibodies. Or it may be an early secondary invader coming in closely on the heels of the measles virus proper. The situation may seem to some, especially those who are prepossessed in favor of the view that measles is caused by a filtrable virus, as in certain ways similar to that which has developed in case of epidemic poliomyelitis by the demonstration by Mathers, Rosenow, Nuzum and Herzog and others, that a coccus, which may be classed as a nonhemolytic streptococcus and which in some ways resembles the Tunnicliff coccus, apparently occurs regularly in the central nervous system in poliomyelitis. So long as experimental poliomyelitis has not been produced by means of pure cultures of this coccus but can be produced by emulsions of poliomyelitic nervous tissue, we are practically driven to conclude that the coccus is a secondary invader and that the reported benefits of the serum of horses injected with the coccus may be due to its action on the coccus rather than on the primary cause. In both measles and epidemic poliomyelitis the infection is believed to enter the body by way of the throat and nose, and in so doing perhaps it opens the door for cocci normally present in the nasopharynx in small numbers. But enough of speculation! It is evident that further observations and experiments of a crucial character are needed to settle the questions raised in regard to the Tunnicliff coccus.

The part played by the influenza bacillus in measles is not clearly established. There seems to be no doubt, however, that it occurs more frequently by far in the throat and nose and in the lungs in measles than in health. This bacillus seems to have a somewhat similar relation to whooping cough and scarlet fever as to measles, and the reasons for this association as well as its possible dangers to the patient are difficult problems that should not be neglected.

It is interesting that the presence of streptococci in measles bronchopneumonia was recognized in practically the first bacteriologic investigation of measles, namely, by Babes, and by Cornil and Babes, as long ago as the early eighties of the last century. In spite of these early observations and of the later observations by Craig, Lorey and others, this bronchopneumonia and other complicating infectious lesions did not receive due consideration, especially from the point of view of spread and prevention, until the recent and highly valuable work in our American Army camps. Here it has been shown that hemolytic streptococci may spread rapidly among persons closely associated, and especially among measles patients when cared for in wards in the old way without individual isolation, and cause extensive outbreaks of bronchopneumonia; further, that when the patients are isolated under conditions that prevent contact with persons, including fellow patients, that may harbor streptococci, streptococcus bronchopneumonia and other serious infectious complications may be avoided. It is evident, of course, that this new and more complete individual and selective isolation, including protection by means of face masks and other measures[2] against transfer by mouth, throat and nose bacteria, tends to avoid not only streptococcus but also other infections.

It has not been determined whether the streptococci concerned in the bronchopneumonia in measles and other allied conditions are of the same strain or belong to different groups. Only hemolytic streptococci have been encountered thus far in the bronchopneumonia in our camps. It is altogether probable that not much can be done by way of protective inoculation before we learn more about the unity or plurality of streptococci and their immune reactions. Lathrope[3] reports a remarkable outbreak of acute mastoiditis after measles and other infectious diseases, and here streptococci of the *S. viridans* type appeared to predominate. Further observations are required to establish definitely the part taken in such processes by nonhemolytic streptococci. Advocates of the view that localization of streptococci may depend on more or less newly acquired special "affinities" naturally will find strong support for this view in the report by Lathrope.

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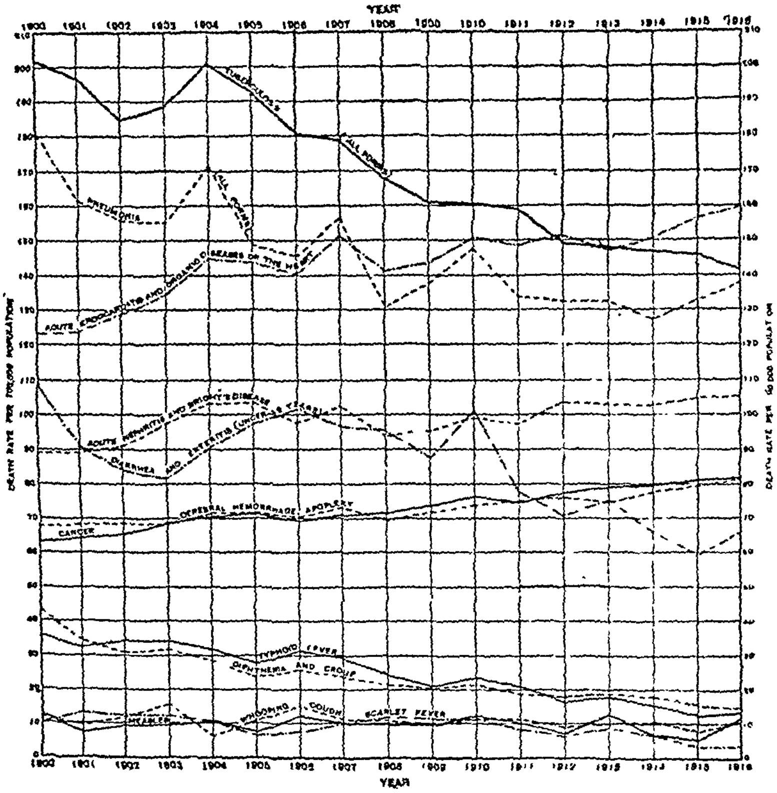
[1] Hektoen, Ludvig: The Bacteriology of Measles, The Journal A. M. A., Oct. 12, 1918, p. 1201.

[2] Weaver, G. H.: The Value of the Face Mask and Other Measures in the Prevention of Diphtheria, Meningitis, Pneumonia, etc., The Journal A. M. A., Jan. 12, 1918, p. 76. Capps, J. A.: A New Adaptation of the Face Mask in Control of Contagious Disease, March 30, 1918, p. 910; Measures for the Prevention and Control of Respiratory Infections in Military Camps, Aug. 10, 1918, p. 448. Haller, D. A., and Colwell, R. C.: The Protective Qualities of the Gauze Face Mask, Oct. 12, 1918, p. 1213. Doust, B. C., and Lyon, A. B.: Face Masks in Infections of the Respiratory Tract, p. 1216.

Still another perplexing question is this: Why in the assembling and training of new armies in other countries, like England and France, did not similar outbreaks of serious streptococcus complications arise after measles? We cannot say whether the decisive factor has been a definite racial susceptibility on our part or the evolution here for some reason of especially virulent streptococci. It is true that our Southern troops appear to be more susceptible to infections than Northern troops, but the study so far given to this problem leaves us still in the dark.



Changes in death rate, 1900-1916.

The many problems that remain unsolved must not lead us to belittle in any way the recent advances. The nature, dangers, mode of spreading, and means of prevention of bronchopneumonia in connection with measles and other diseases are now better understood than ever before. In 1847, in his classical study of measles in the Faroe Islands, Panum wrote that isolation is the way to prevent its spread. Today we can say that the way to prevent the complication that more than anything else makes measles a dangerous disease, namely, streptococcus bronchopneumonia, as well as other secondary infections, is also isolation—prompt, selective and protective. This new principle must now be applied in private practice and in civil hospitals, because undoubtedly even here many deaths from bronchopneumonia and secondary infections generally in measles and other acute diseases are preventable.

MORTALITY STATISTICS FOR 1916

The report of the Bureau of the Census on the mortality statistics covering the registration area for 1916 has just appeared. The death rate was 14 per thousand population, slightly exceeding the rates for 1914 and 1915, which were 13.6 and 13.5, respectively, but slightly lower than that for 1913, which was 14.1. Of the 1,001,921 deaths that occurred in the registration area, 54.7 per cent. were males and 45.3 per cent. famales. Infants under one year of age constituted 16.4 per cent. of all deaths, continuing the gradual decrease that has taken place since 1900 in deaths of infants under 1 year. In 1900 this rate was 20.7 per cent. of the total. The deaths of infants under 5 years have gradually decreased from 30.4 per cent. of all deaths in 1900 to 23.4 per cent. in 1916. The highest death rates in 1916 occurred in Maryland with 16.5; Connecticut, 16.3, and New Hampshire, 16.1; the lowest rates in Washington, 7.7; Colorado, 10.3; Utah, 10.4; Minnesota, 10.7, and Kansas, 10.9.

The accompanying chart indicates the changes in the death rate from certain important causes of death from the years 1900 to 1916. The death rate from tuberculosis continues gradually to decrease; the rate for pneumonia, though gradually decreasing, showed a slight rise in 1916; the death rate from diseases of the heart continues to rise gradually. The death rate from intestinal diseases of infants under 2 years continues gradually to decrease; the rate from cancer and from nephritis and Bright's disease continues at a very gradually increasing level. Typhoid fever and diphtheria likewise continue at a low rate without marked decrease or increase, and in the same way measles, whooping cough and scarlet fever change but little during this period.

Throughout the mortality statistics the one outstanding feature is the much higher death rate that persists among the colored as compared with the white population. This can, of course, be accounted for by many well-known factors.

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[3] Lathrope, G. H.: Acute Mastoiditis as a Complication of Infectious Diseases, The Journal A. M. A., Aug. 10, 1918, p. 451.

At this time it is interesting to note the mortality from influenza in 1916. In that year influenza developed in epidemic form and caused 18,886 deaths, equivalent to a rate of 16.4 per hundred thousand population, representing an increase of 65 per cent. over the rate for 1915, which was 75 per cent. higher than that for 1914. The rate for this disease will undoubtedly be higher for 1918 than for 1916.

The death rate for suicide in the registration area for 1916 was the lowest recorded for the past ten years. The five states that showed the highest rates were California, Montana, Indiana, Vermont and Missouri. The five states with the lowest rates were North Carolina, South Carolina, Kentucky, Virginia and Kansas. The five cities with the highest rates were San Francisco, Bridgeport, Conn., Omaha, Los Angeles and Indianapolis. Those cities with the lowest rates were Scranton, Pa.; Lowell, Mass.; Birmingham, Ala.; Richmond, Va.; Cambridge, Mass., and Buffalo. The most notable increase that occurred in any city occurred in Indianapolis, an increase of 27.9 against 16.9.

Excluding suicides, various forms of violence caused 65,121 deaths in 1916. This heading includes death from accidental and undefined causes, as well as those from homicide. There were 5,050 murders in 1916. The greatest number of violent deaths represent human carelessness and instability, since 10,775 deaths followed traumatism from falling; railroad accidents and injuries accounted for 8,127; accidental burning, 6,185; burns, 5,726; automobile accidents, 5,193, and gas poisoning, 2,927, all representing increases from 1915, except accidental burning. The rate of death from automobile accidents has advanced steadily since 1906, when it stood at 0.4 per hundred thousand, to 1916, when it stood at 7.3. Twenty-seven and nine-tenths per cent. of the total number of deaths from automobile accidents were of children under 15 years of age. The five cities showing the highest rate for automobile accidents are, in order, Detroit, Bridgeport, Conn., Los Angeles, New Haven, Conn., and Cleveland; the five cities showing the lowest rates are Spokane, Louisville, Ky.; Fall River, Mass.; Portland, Ore., and Lowell, Mass. The rates for three large cities are: Chicago, 9.7; Philadelphia, 8.9, and New York, 7.7.

Of course, one of the greatest factors affecting statistics of the causes of death is the accuracy of physicians' reports. The Census Bureau has made a continuous endeavor to increase accuracy, and results show a gradual improvement. The bureau has sent to physicians two pamphlets bearing on this subject, namely, "The Relation of Physicians to Mortality Statistics," and "The Physician's Pocket Reference to the International List of Causes of Death." Physicians should study these carefully and endeavor to use definite terms in reporting causes of death. The value of mortality statistics in determining lines of endeavor for prophylaxis against disease cannot be overestimated. Every physician should do his utmost to aid in securing accuracy.

It is to be regretted that the publication of these annual reports is still sadly delayed. There certainly can be no good reason for a delay of more than a year and a half.

OXIDATION IN THE BODY

The French scientist, Lavoisier, who first discovered the true importance of oxygen and gave it its present name, early declared that life processes are those of oxidation with the elimination of heat. In his classic researches which opened the modern era in the science of nutrition before the close of the eighteenth century, he established the fundamental fact that the quantity of oxygen absorbed and of carbon dioxid excreted depends primarily on food, work and temperature. Although many years subsequently it was not uncommon to hear that oxygen determines metabolism, the reverse has become firmly established today, namely, that the extent of metabolism determines the amount of oxygen to be absorbed.

The problem of how the physiologic oxidations are initiated and carried out has been a perplexing one to a generation or more of chemically trained investigators. It seems remarkable, of course, that our foodstuffs and their simpler derivatives should be oxidized to their end-products under conditions in which oxidation reactions cannot readily be carried out in the laboratory. Fats and sugar, for example, are not easily converted into carbon dioxid and water by mere contact with oxygen at body temperature. It seems reasonable to postulate some intermediating agency like an enzyme in the physiologic execution of the oxidative change. Burge of the University of Illinois has championed such a view. He has found that many performances which increase oxidation in the body also stimulate the liver to an increased output of catalase, an enzyme in the tissues having the property of liberating oxygen from peroxids. The conclusion is reached by this physiologist that catalase is the enzyme principally responsible for oxidation in the body. In the latest experiment in relation to this topic,[1] a comparison has been made of the catalase content of the blood before and after introduction of food materials into the body. Thus it was found that simple sugars rapidly led to an increase in the oxygen-liberating enzyme—in some cases as much as 40 per cent. above normal; with fats there was also a pronounced gain, the rapidity of its occurrence depending on their rate of alimentary absorption. Meat, as a specimen of protein food, provoked an increase in proportion to the liberation of its digestion derivatives ready for transport in the circulation. Moderate exercise also had an augmentative effect on the enzyme concentration in the blood; although work up to the stage of extreme fatigue had an effect quite different.

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[1] Burge, W. E.: How Food and Exercise Increase Oxidation in the Body, Science, Aug. 16, 1918, p. 174.

From observations of the sort hastily reviewed, the conclusion is drawn by Burge that food and exercise produce an augmentation in catalase with resulting increase in oxidation by stimulating the liver to a larger output of this enzyme. There is a tendency to quote such statements without a due recognition of the limitations to our knowledge contained in them. It is one thing to observe the liberation of oxygen from peroxid in a test tube under the influence of a tissue extract or fluid; quite another problem is concerned in connecting such experimental facts with the complexities of reaction demanded by the known conditions of tissue oxidation. The mechanism of the latter remains, now as before, obscure and a subject for explanation.

Current Comment

VACCINES IN INFLUENZA

With the appearance of the epidemic of influenza, reports began to appear, chiefly in newspapers, as to new serums, vaccines, drugs and other methods for checking and even for curing the disease. A few samples of such as have come to THE JOURNAL appear in our Tonics and Sedatives Department this week. In Massachusetts, Commissioner E. R. Kelly appointed two committees to investigate the value of influenza vaccines as a preventive agent and as a treatment of the disease. The first committee, a special board for scientific investigation, consisting of Dr. M. J. Rosenau, chairman, and Frederick P. Gay and George W. McCoy, was appointed to consider the evidence available on the prophylactic and therapeutic use of vaccines against influenza. This committee presented the following conclusions:

> 1. The evidence at hand affords no trustworthy basis for regarding prophylactic vaccination against influenza as of value in preventing the spread of the disease, or of reducing its severity. The evidence from the present epidemic, though meager, suggests that the incidence of the disease among the vaccinated is smaller than among the nonvaccinated. The board, therefore, concludes that further experimental evidence should be collected.
>
> 2. The evidence at hand convinces the board that the vaccines we have considered have no specific value in the treatment of influenza.
>
> 3. There is evidence that no unfavorable results have followed the use of the vaccines.

The second committee, known as the Special Board of Statistical Investigation, consisted of Dr. George C. Whipple, chairman, William H. Davis and F. C. Crum. This committee reported:

> 1. The weight of such statistical evidence as we have been able to accumulate indicates that the use of the influenza vaccine which we have investigated is without therapeutic benefit. Exceptional cases where apparent benefit has resulted from the use of the vaccine can be matched by other cases where similar recoveries have been made without vaccination.
>
> 2. The statistical evidence, as far as it goes, indicates a probability that the use of this influenza vaccine has some prophylactic value.
>
> 3. There is also some evidence to the effect that other methods of protection, such as open-air treatment and the use of proper masks, are effective in protecting exposed attendants, and the use of vaccine should not be taken as an excuse for omitting such safeguards.

As a result, the following recommendations were made:

> That the state encourage the distribution of influenza vaccine intended for prophylactic use, but in such manner as will secure scientific evidence of the possible value of the agent. The use of such vaccine is to be regarded as experimental.
>
> That the state shall neither furnish nor endorse any vaccine at present in use for the treatment of influenza.

These reports are conservative, and offer to other health commissioners and their communities a reliable guide as to procedures that should be adopted before subjecting or trying out on the public any method of prevention or treatment that may be offered. These matters are the domain of medical science, and medical scientists of recognized ability should be called on to make the decision.

SCHEDULE OF STUDIES FOR PREMEDICAL STUDENTS

On another page[1] is published a special circular from the Committee on Education and Special Training of the War Department, which gives the program of studies for premedical students in the Students' Army Training Corps. The course is arranged only for the first three months of the college year and consists of inorganic chemistry, 21 hours per week; biology, 12 hours per week, and war issues, 9 hours per week; or a total of 42 hours of professional instruction, to which are added 11 hours per week of military instruction consisting largely of drill and physical training. As we intimated recently,[2] this course was previously outlined for students in the Divisions of Chemistry and Chemical Engineering, the only change being the substitution of twelve hours of biology for the twelve hours of mathematics. As suggested in the special circular, premedical students may profitably be taught their chemistry in the same classes with students in the Division of Chemistry and Chemical Engineering. Special classes in physics, chemistry and biology will be provided for students who have already completed their first year of premedical work, so that in the shortest time possible they may complete the balance of the work in those subjects at present required for admission to medical schools. The schedule of work for the balance of the premedical course is to be submitted later. The entire premedical course is to be condensed so that it may be completed in four quarters (instead of six) of twelve weeks each. The eleven hours per week of required military instruction will provide the physical training highly desirable for students who are expected to master the work laid down in this condensed schedule. In the past, it has been claimed that the curricula of our colleges of liberal arts have been so easy that they fail to develop the students' powers of industry and application. Permanent changes in their curricula may result, therefore, if the present plan of instruction for premedical students works out as well as it is hoped by those who prepared it.

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[1] This issue, p. 1319.

[2] Uncertainty Regarding Premedical Students, Current Comment, THE JOURNAL A. M. A., Oct. 5, 1918, p. 1141.

EFFECT OF QUININ ON PROTEIN METABOLISM

There are numerous drugs known to stimulate metabolism and facilitate the destructive disintegration of protein in the body. Few, on the other hand, are the instances of decreased nitrogenous metabolism attributable to the action of chemical compounds introduced into the organism in pharmacologic doses. Quinin is an illustration of the latter type; it is known to affect the nitrogen balance in a favorable way, so that the use of the drug in fevers attended with considerable tissue destruction has even been defended on the basis of its conserving effects. Riddle and Anderson[1] of the Station for Experimental Evolution at Cold Spring Harbor, Long Island, have demonstrated the comparable behavior of quinin on structures specifically concerned with the production or secretion of protein. Thus the drug was found to have a conserving action in birds on functions of the oviduct, the essential output of which is the egg albumin. The amount of this was abnormally decreased under quinin fed to laying ring-doves; there was also a reduced size of the yolks. The investigators believe the reductions and fluctuations in size of the ova are consonant with the view that, in these cases, the size attained is governed by restrictions placed on the protein metabolism rather than on the general metabolism.

VOLUNTARY ACCELERATION OF THE HEART BEAT

Ability to bring about voluntary acceleration of the heart beat in man is a rare and interesting accomplishment. West and Savage[2] of the Peter Bent Brigham Hospital, Boston, have just recorded the fifteenth authentic case in medical literature. The subject was a healthy medical student who had no cardiovascular symptoms and had never experienced attacks of tachycardia. He discovered the ability to increase his heart rate voluntarily during the course of his studies in physiology. During the period of acceleration there is a slight increase in the rate and the depth of respiration, and the pupils dilate moderately as recorded by other observers. No definite physical effort is made, but constant mental concentration must be maintained, which, after several closely repeated trials, becomes quite fatiguing. The current belief as to the mechanism of this acceleration assigns the chief participation to the action of the accelerator nerves.[3] The further possibility that the speeding up of the heart may be due to release from vagus inhibition has usually been rejected. In the new case, atropin, which paralyzes the vagus endings in the heart, had an undeniable effect in decreasing the ability voluntarily to change the heart rate. Therefore West and Savage believe that in this person their observations "point more to vagus than to accelerator domination during periods of acceleration." It is doubtless the same mechanism that accounts for the acceleration accompanying exercise. At present, however, it cannot be denied that both vagus and accelerator nerves may share in the speeding up of the heart, or that the effect of each may, if necessary, augment that of the other.

Medical Mobilization and the War

THE AMERICAN DOCTOR IN ENGLAND

Sir William Osler sends the following poem from the *Westminster Gazette* of September 18, in which it was published under the caption "The Doctor." He says that it "expresses well what the patients think of the American boys in the English hospitals. They have done splendidly. We have a dozen fine fellows in the orthopedic department here. The enthusiasm for the U. S. is intense—and how well deserved!"

Oh, it's grand of a man who comes five mile
For the sake of your pain-racked form;
Who will leave his rest with a cheery smile,
And the darkness dare or the storm.
Who has ne'er a sigh though his door-bell ring
When the hour of the morn is small,
But hurries along, though the shrill winds sting,
At the haste of a patient's call.

Oh, it's grand, is it not?—and just as true
That he prides himself not a whit,
But is glad if his skilled hand bring to you
Some ease in the soothing of it.
His duty?—just so! but it's grand no less,
No matter the time or the task,
That he readily gives in hours of stress
Of his gifts—and to all who ask.

But what shall you say of the man I know,
Who, to ease our aching and pain,
Has come not five but five thousand miles so
In darkness, in blast, and in rain?
Oh, it's grand when I think—you'd think so too!—
(Though you honor your own no less)
To lie in a ward with the men in blue,
Where your doctor's khaki's "U. S."

James T. Skinner.

Hospitals for Reconstruction

The Surgeon-General of the Army has taken over Fort Snelling, Minn., Fort Sheridan, Ill., and Fort Benjamin Harrison, Ind., and will convert them into additional general hospitals for the reception of sick and wounded soldiers returned from abroad. They are to be reconstruction hospitals and to fit the wounded for vocational instruction. Each hospital unit will accommodate 1,000 patients.

Examination for Navy Medical Corps

An examination will be held, October 30 and 31, to fill 326 vacancies in the regular Medical Corps of the Navy. The examination will be open only to present members of the Medical Corps, N. R. F., who are between 21 and 32 years of age.

Colonel McCulloch to Prepare Medical History of the War

Col. Champe C. McCulloch, Jr., M. C., U. S. Army, executive officer of the Board for Collecting and Preparing Material for a Medical and Surgical History of American Participation in the European War, has arrived in France, to establish his administration for this purpose. During his absence Lieut.-Col. Casey A. Wood, M. C., U. S. Army, will be in charge of this work in the Surgeon-General's Office.

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[1] Riddle, O., and Anderson, C. E.: Studies on the Physiology of Reproduction in Birds, VIII, The Effects of Quinin on the Production of Egg Yolk and Egg Albumin, Am. Jour. Physiol., 1918, **47**, 92.

[2] West, H. F., and Savage, W. E.: Voluntary Acceleration of the Heart Beat, Arch. Int. Med., September, 1918, p. 290.

[3] Favill, J., and White, P. D.: Heart, 1917, **6**, 175.

Promotion of Retired Medical Officers

Senator Shepherd, on September 26, introduced a bill authorizing the President to promote to brigadier-general, retired, those officers of the Medical Department who entered the service of the United States over thirty-five years ago, and who at this time, though retired, are in active duty in war work.

Naval Base Hospital in Scotland

Naval Base Hospital No. 3, commanded by Capt. Charles M. De Valin, M. C., U. S. Navy, which was organized with personnel mostly from Los Angeles, is now located in Scotland, where it occupies a building formerly utilized by the Royal Army Hospital Service. It has accommodation for 625 patients with possibilities of expansion to accommodate 825, and will care for patients in the naval dressing, and the personnel of the British and American Expeditionary Forces.

Physical Qualifications for Medical Service with the Red Cross

We are informed by Dr. Alfred E. Shipley, secretary of the medical advisory committee of the American Red Cross, Washington, D. C., that every individual going abroad, in whatever capacity, in Red Cross work is required to pass a satisfactory physical examination. In the medical division physicians are sometimes accepted for Red Cross work who, because of physcal disqualification, are unable to secure commissions in the Medical Department of the Army. It is appreciated by the Red Cross that such physicians may be used in the medical work among the civilian population abroad as they are not placed under the strain incidental to work in the war areas.

Promotions

The following officers have been promoted from major to lieutenant-colonel: Edward J. G. Beardsley, Philadelphia; Thomas P. Lloyd, Shreveport, La.; James A. Mattison, Hot Springs, S. D.; Joseph Sailer, Philadelphia; Oliver H. Campbell, St. Louis; Bertram F. Alden, San Francisco; Walter W. Crawford, Hattiesburg, Miss.; Jonathan E. Burns, Baltimore; Charles N. B. Camac, New York; William C. LeCompte, Bristol, Pa.; Harry T. Summersgill, San Francisco; Charles H. Schlichter, Elizabeth, N. J.; Edward W. Pinkham, New York; William J. Bell, Washington, D. C.; Warren A. Dennis, St. Paul; Joshua C. Hubbard, Boston; Wiley E. Woodbury, New York; Edmund J. Doering, Chicago; John E. Jennings, Brooklyn; William W. Percy, Rochester, N. Y.; John H. Blackburn, Bowling Green, Ky.; Edmund Moss, New Orleans; Henry R. Brown, Albuquerque, N. M.; Robert Smart, Coronado, Calif.; Herbert H. Smith, Highland, Kan.

Revision Standards of Physical Examination

The office of the Provost Marshal-General has just issued to the draft executives of all states, a revision of Form 75, the Standards of Physical Examination. The changes are few, and are mainly with a view to making available the greater number of registrants having remediable defects (Group B), by transferring them to Group C, for special or limited service. Thus, when inducted and accepted at camps, the defects may be corrected when convenient; meanwhile, the Army will have the benefit of the service of these men.

Registrants who have heretofore, on examination, fallen into Group B (the deferred remediable group) and now, under the revised Form 75, have physical defects placing them in Group C (as physically qualified for special or limited military service), are at once to be reviewed, reexamined if necessary, and recorded in Group C, *subject to call for special or limited military service.*

The next most important change is that which cites certain variations from Army physical standards in the assignment of inducted men to the Navy and the Marine Corps. This states:

5. Navy standards of physical requirements conform in the main to those of the Army included under Group A. But registrants who, on examination, present the following defects, shall not be accepted for service in the Navy or Marine Corps:

Eyes: (A) Vision less than three quarters of the normal in either eye. (B) Color blindness.

Skin: (A) Parasiting affections, including pediculosis, ringworm and scabies. (B) Eczema. (C) Psoriasis.

Genito-urinary organs and venereal diseases: (A) Absence, atrophy or nondescent of both testicles. (B) Venereal disease, any type or stage.

Height: Over 74 inches.

ARMY TO HAVE SPECIAL REGULATIONS

Form 75 pertains only to the Selective Service and will not be issued to the Army. In its stead, the Adjutant-General will distribute to all mobilization points a pamphlet known as Special Regulations No. 65, War Department, which is identical with Form 75 as to physical standards.

DESTRUCTION OF PREVIOUS EDITION

On receipt of the Second Edition of Form 75, old copies of the former edition should be at once destroyed, with the exception of such as are needed to complete permanent reference files.

From a Rookie at Fort Oglethorpe

The following is from a personal letter, and not intended for publication. As Fort Oglethorpe is the first assignment to the great majority of physicians who enter the Medical Corps, a record of the experience of "one of us" will be read with satisfaction.

Got here eight days ago, or perhaps nine—all days are alike now—and am in a good bunch of fellows, from 40 to 54 years old and growing younger visibly day by day. If you ever desire to lose some of your sylphlike rotundity I would prescribe this Greenleaf process of reduction and guarantee results. Everything undergoes reduction here—at once you become a private, reduced from lieutenant, captain, or what not—and down goes all your fancied military glory at one crack. I have learned with due humility to my soul's salvation that there are certain ways inviolate in which to fold blankets, scrub cots, oil floors, fill water buckets, and hang up clothes. Also that to do your own laundry work may be advisable. It's the greatest institution of applied learning in the world and you could not begin to pay me for the experience. I enjoy everything from soup to nuts, including rolling in the clay dirt at 6:15 every morning. By evening that tired feeling assumes enormous proportions and at 9:30 you go to sleep with a bang and are only roused at 4 a. m. or so by the procession of prostatics on their parade to the latrine. This is a community existence applied to every detail of one's daily functions; the monastic soul receives a rude shock at every turn. It's the biggest game that any fellow ever was privileged to join in with, and I am really sorry for those who have missed the chance to go to Camp Greenleaf. Everyone is enthusiastic and full of "pep," and the older men have my unbounded admiration for their gameness. We are kept on the jump from early morning till 9:30 p. m., and have to make use of every interval, for at any moment you may be (and usually are) called out for something or other, usually extra drill, or policing the grounds, or other equally fascinating pursuits.

Because we started a new company and I was one of the first two arrivals, the honorable assignment of Barracks Sergeant fell to my lot, and that means responsibility for the condition of the barracks. It's a sort of masculinized housekeeper's job and with my staff of highly trained assistants (trained in every respect but housekeeping) the setting sun each day finds our work well *done*, but the inspector takes a different view of the matter and isn't a good inspector unless he can find something to criticize, which he always does.

INFORMATION FOR MEDICAL SCHOOLS AND PROGRAM FOR PREMEDICAL STUDENTS

The War Department, Committee on Education and Special Training, has issued a special bulletin relating to the courses to be followed by premedical students:

1. Beginning October 1, terms should be granted in all schools on a quarterly basis, in each term twelve weeks being devoted to instruction and examinations.

2. Members of the Students' Army Training Corps will be under military discipline continuously, and, as soon as proper arrangements can be completed, they will live in barracks as prescribed by the military authorities. A definite schedule of work must be arranged, eleven hours per week being devoted by medical students to practical military instruction (drill, etc.), theoretical military instruction and physical training, and forty-two hours per week to professional instruction, this time including lectures, recitations and supervised study. In the case of students who have pursued for at least one year at an approved institution such studies as form part of the program of preparation for the Medical Corps, the Committee on Education and Special Training may authorize a reduction in the hours of military instruction to not less than six hours provided the reduction is made good by the substitution of a corresponding number of hours in approved medical subjects. (For the schedule for premedical students see 6 and 7, below.) Seniors should enter the Students' Army Training Corps; but it is expected that special

arrangements will be made for those who are serving as interns in hospitals, and possibly for other advanced students —probably by means of furlough.

3. Medical schools are classified as professional schools under the Special Regulations for the Students Army Training Corps (Aa.1, par. 26). The program of studies for these schools is not yet prescribed, but a program approved by the Committee on Education and Special Training will be sent to the schools in the near future. In the meantime the schools should continue their existing programs except for such modifications as may be necessary to introduce military training, and the course in war issues.

4. Students intending to prepare for the study of medicine should register as premedical students.

5. Premedical students must pursue a course that is approved as a premedical course by the Committee on Education and Special Training.

6. A special war issues course is prescribed for all students who are not excused under the following provisions of par. 26, Special Regulations:

"The District Educational Director (Section A—Collegiate Section) may empower colleges to excuse from this course:

"(1) Members of the S. A. T. C. who have had a similar course even though not identical in every detail, or

"(2) Members of the S. A. T. C. who have had at least two years of work of collegiate grade in an approved institution and who should be required to concentrate the whole of their time on advanced studies."

The war issues course is described in Special Descriptive Circulars C.c. 12 and C.c. 13.

7. For the first quarter of the premedical course the following program is prescribed: Inorganic chemistry, twenty-one hours per week; biology, twelve hours per week; war issues, nine hours per week, and military instruction, eleven hours per week. This course corresponds to the course approved for students of chemistry and chemical engineering with the substitution of biology for mathematics. Students in the premedical group may profitably be taught in chemistry in classes together with students taking the chemistry program. The program for the remaining terms of the premedical course will be submitted later. The premedical course will be condensed to cover four terms of twelve weeks each and eleven hours of military instruction will be required.

8. Students who have already pursued the premedical course for one school year should concentrate on chemistry, physics and biology. In each case they should take work in these subjects to the extent needed to meet the present requirements for admission to medical schools in order that they may be prepared to enter on their professional study of medicine as soon as practicable. Second-year premedical students will have eleven hours of military instruction.

9. Those who pursue a course not approved as a premedical course (see sections 4 and 5) will not be regarded as premedical students, and their attention should be directed to General Circular C.a.4.

Committee on Education and Special Training,
By R. C. Maclaurin,
Educational Director, Collegiate Section.

Oct. 3, 1918.

BRIGADIER-GENERAL MUNSON ASSIGNED TO THE GENERAL STAFF

Col. Edward L. Munson, for twenty-five years an officer of the Medical Corps of the Army, has just been promoted to the rank of brigadier-general, and with the promotion selected for duty on the general staff. The new commission is in the line of the Army. General Munson is the third medical officer of the Army to be given general officer's rank for duty outside the Medical Department of the Army, the previous appointees being Generals Ainsworth and Leonard Wood. General Munson has had extensive experience in administrative work, having organized and administered the training system in training camps of the Medical Department, later being placed in command of Camp Greenleaf. Under his direction the medical officers' training camp at Fort Riley was merged with Camp Greenleaf into the greatest training camp for medical men ever organized. General Munson is also known for his textbooks on military hygiene and the work of the medical department in war used as official textbooks by the War Department. As editor of the *Military Surgeon* and secretary of the Association of Military Surgeons he is personally known to many of the officers in the service. He has also devised several articles of equipment adopted by the War Department, notably the tropical service tent, and as president of a board, the present widely known army shoe. He has been twice gold medallist of the Military Service Institution and was twice appointed by the Philippine government as health officer for the Philippine Islands. Recently he submitted a plan to the War Department for the psychologic stimulation of troops in the promotion of fighting efficiency. This method was demonstrated while Colonel Munson was in charge at Camp Greenleaf and caused his selection as an officer of the general staff to carry out the extension of this system throughout the entire Army. General Munson is a native of New Haven, Conn., and a graduate of Yale University, from which he received the degrees of A.B., A.M. and M.D.

Brigadier-General Edward L. Munson

COMMISSIONS ACCEPTED, MEDICAL CORPS, U. S. ARMY

Previous lists published in The Journal, June 1, 22 and 29, July 13, 20 and 27, August 3, 10, 17, 24 and 31, September 7, 14, 21 and 28, October 5 and 12.

ALABAMA

Cordova—Waldrop, A. M.
Mobile—Beck, Julius E.
Farish, C. E.
Selma—Gay, S. G.

ARKANSAS

Pine Bluff—Brunson, A.

CALIFORNIA

Camino—Chamberlain, G. L.
Ione—Robinson, C. A.
Los Angeles—Albert, W.
Rio Vista—Welin, A. F.
San Diego—Crabtree, E. H.

COLORADO

Colorado Springs—Peters, A. H.

CONNECTICUT

Hartford—Martelle, H. A.
Lakeville—Peterson, C. K.
New Haven—Welch, H. L.

DISTRICT OF COLUMBIA

Washington—Leece, R. H.
Norcross, A. C.

FLORIDA

St. Augustine—Estes, E. S.

GEORGIA

Albany—Barnett, J. M.
Dot—Beason, L.
Ochlocknee—Winchester, M. E.
Pembroke—Strickland, J. O.
Waycross—Johnson, R. L.

IDAHO

Spirit Lake—Prindle, E. S.

ILLINOIS

Chicago—Benner, C. R.
  Hanson, O. L.
  Lyons, E. W.
  Mann, S.
  Rennie, T. W.
  Rogers, B. S.
  Segall, I. S.
Durand—Kassmeyer, J. C.
East Moline—Randolph, H. E.
Evanston—McClure, W. B.
Genesee—Parsons, A.
Hebron—Bailey, C. W.
Kincaid—Klein, G. C.
Middletown—MacPherson, C. H.
Moline—Wessel, P. H.
Mount Carroll—Bowman, L. F.
Princeton—Schroeder, F. B.
Roodhouse—Edwards, O. L.
Sterling—McCandless, W. H.
Taylorville—Marney, W. J.

INDIANA

Clinton—Warman, A. P.
Grand View—Biedenkopf, C. J.
Huntington—Galbreath, R. S.
Lake—Thompson, A. B.
Newburgh—Munns, C. J.
Rensselaer—Washburn, I. M.
Terre Haute—Hauck, J. H.
Valparaiso—Evans, H. M.
Winslow—Detar, G. B.

IOWA

Charles City—Woodruff, R. H.
Davenport—Middletown, G. M.
Donahue—Sullivan, L. F.
Mount Ayr—Lesan, C. T.
Sheffield—Collins, J. L.
Terril—Schooley, A. H.
Titonka—Wallace, R. M.
Washington—Wickham, E. T.

KANSAS

Concordia—Laing, R.
Ellis—Blake, C. D.
Wellington—Netherton, F. F.
  Van Deventer, R. W.

KENTUCKY

Big Spring—Witt, C. B.
Leesburg—Blount, H. C.

LOUISIANA

Bogalusa—Dean, C.
New Orleans—Gelpi, M. J.
  Keitz, E. S.

MAINE

Camden—Hutchins, J. G.
Rockland—Frohock, H. W.

MASSACHUSETTS

Boston—Abbe, F. R.
  Jones, T. P.
  MacLeod, H. F.
Newton—Maskell, L. J.
Springfield—Eastman, A. C.

MICHIGAN

Detroit—Kennedy, C. S.
Grand Rapids—Depress, P. J.
Manistee—Ramsdell, L. S.

MINNESOTA

Lake City—Cochrane, W. J.
Minneapolis—Newkirk, H. D.
  O'Donell, J. E.
  Tanner, A. C.
Rochester—Irwin, H. C.

MISSOURI

Kansas City—Breyfogie, H. A.
  Hearst, A. L.
  Lane, H. H.
Pattonville—Coleman, H. T.
Springfield—Gifford, A. W.
St. Louis—Benson, B. G.
  Forster, O. E.
  Gregg, C. P.
  Lyter, J. C.
  Wright, C. G.

MONTANA

Billings—Wernham, J. I.
Havre—Houtz, C. S.
Warm Springs—Scanland, J. M.

NEBRASKA

Lexington—Brix, A. E.
Lincoln—Crutcher, W. H.

NEW JERSEY

Dover—Ackerman, E.
Jersey City—Jones, J. M.
Newark—Stahl, A.
Paterson—Russell, C. B.

NEW YORK

Albany—Mount, L. B.
Brooklyn—Blinder, J.
  Bliss, R. F.
  Blum, S. G.
  Mays, A. T.
  Ruzicka, O. J.
  Wilson, E. F.
Catskill—Branch, G. L.
Elmira—Mark, A.
Ilion—Leonard, F. J.
Livonia—Wicker, F. A.
Mount Vernon—Sinnott, J. J.
New York—Barsky, M. H.
  Globus, J. H.
  Gluck, C.
  Hoff, H. C.
  Howell, C. H.
  Sloan, H. L.
Oriskany—Allen, B. P.
Peekskill—Foshay, J. R.
Petersburg—Mann, C. M.
Syracuse—Foreman, T. F.
  McNerney, W. J.
  Ruland, A. S.
Walton—Gladstone, E. R.
Watertown—Vanderen, G. B.
Yonkers—Frischman, L.

NORTH CAROLINA

Asheville—Adams, J. L.
Salisbury—Spencer, F. B.

OHIO

Akron—Malloy, E. B.
Alliance—Mutchman, L. F.
Canton—March, H. A.
  Smock, I. B.
Columbus—Woods, G. W.
Edon—Brandon, E. F.
Lima—Knisely, A. D.
Marion—Mahla, F. E.
McCutchenville—Heaton, J. J.
Nelsonville—Welch, C. E.
Tiffin—Porter, E. H.
Toledo—Hasencamp, O.
Toronto—Casey, B. L.
Troy—Shinn, J. S.
Urbana—Barger, F. F.
Wadsworth—Johnson, R. L.
Zanesville—Brown, E. M.
  Sealorer, W. F.

OKLAHOMA

Velma—Thomason, E. B.

OREGON

Athena—Newson, G. S.
Independence—Hewett, F. G.
Portland—Higgs, A. K.

PENNSYLVANIA

Butler—McCal, W. A.
Dixmont—Heller, P. K.
Donora—Furlong, R. G.
Glenside—Huber, W. H.
Lawrenceville—Smith, L. C.
McKeesport—Hinchman, R. S.
  Jordan, S. S.
Morris Run—Wilson, W. C.
Philadelphia—Birney, H. H.
  O'Donnell, D. S.
Pittsburgh—Demuth, J. S.
  Denslow, W. B.
  Flinn, J. E.
  Hesser, A. J.
  Lange, C. C.
Pottsville—Rogers, J. B.
Reading—Gable, F. J.
Ulysses—Genung, B. W.

RHODE ISLAND

Providence—McCabe, J. E.
  Messenger, H. C.
  O'Rourke, C. B.
  Rushton, P. H.

SOUTH CAROLINA

Charleston—Desaussure, H. W.
York—Barron, J. I.

TENNESSEE

Ducktown—Guinn, A. J.
Franklin—German, D. V., Jr.
Nashville—Rieger, H. P.

TEXAS

Beaumont—Scheller, L.
Midlothian—Harris, J. P.
Paducah—Stone, F. E.
Walnut Springs—Barnett, J. H.

VIRGINIA

Richmond—Martin, G. B.
Staunton—Tynes, A. L.
Virgilina—Jordan, R. S.

WEST VIRGINIA

Hinton—Vansant, W. L.
Parkersburg—Gaynor, H. E.
Shepherdstown—Bragonier, R. K.

WISCONSIN

Fennimore—Bailey, M. A.

WYOMING

Lusk—Hassed, W. H.

COMMISSIONS OFFERED AND ORDERS TO DUTY ON ACCEPTANCE

Alabama

To Camp Joseph E. Johnston, Fla., Lieuts. E. P. GREEN, Birmingham; W. T. STOKES, Ethelsville.

To Camp McClellan, Ala., base hospital, Lieut. G. LOTTERHOS, Birmingham.

To Fort McPherson, Ga., Capt. C. M. RUDULPH, Birmingham.

To Fort Oglethorpe for instruction, Capt. J. L. WOODSON, Oakman; Lieuts. A. C. GREEN, Birmingham; W. L. SHACKLEFORD, Gordo.

Arkansas

To Camp Beauregard, La., base hospital, for instruction, Capt. A. H. TRIBBLE, Hot Springs; Lieut. B. D. LUCK, Pine Bluff.

To Camp Logan, Texas, Lieut. J. C. GRAVES, Lockesburg.

To Fort Oglethorpe for instruction, Capt. E. L. WATSON, Newport; Lieut. A. G. HARRISON, Searcy.

To Fort Riley for instruction, Lieuts. M. V. RUSSELL, Hope; N. C. McCOWN, Palestine; C. M. BROOKS, Roland; R. B. CORNEY, Tucker.

California

To Camp Cody, N. M., Lieut. J. Y. BARTHOLOMEW, San Francisco.

To Camp Custer, Mich., base hospital, Capt. J. B. WOODWORTH, Redlands.

To Camp Fremont, Calif., base hospital, for instruction, Capts. T. M. CARTMELL, C. E. ZERFING, Los Angeles; Lieut. J. L. MUDD, Merced.

To Camp Kearney, Calif., Capts. W. G. BEATTIE, Colma; E. E. ROBERTS, Sawtelle; Lieuts. R. K. McGUFFIN, Imperial; C. V. NELSON, Los Angeles; J. M. GARDNER, Lodi; C. E. VON GELDERN, Palo Alto; I. J. WATERMAN, Pasadena; L. F. WOOD, Jr., Point Loma; A. G. FOLTE, A. V. GUNTZ, M. E. O'NEIL, San Francisco. Base hospital, Capt. W. R. McNAIR, Los Angeles. Base hospital, for instruction, Capts. E. H. THOMPSON, Burbank; W. W. MACKENZIE, Los Angeles; J. F. POHEIM, B. S. STEVENS, H. W. STIREWALT, San Francisco.

To Camp Pike, Ark., base hospital, Capt. R. R. REA, E. B. SWEET, Los Angeles.

To Camp Travis, Texas, Capt. W. H. BENNETT, Los Angeles.

To Fort Oglethorpe for instruction, Capt. L. R. WILLSON, Fresno; Lieuts. J. F. SLAVICH, Oakland; A. O. HOLMES, Redlands.

To Fort Riley for instruction, Capt. U. S. ABBOTT, Richmond; Lieut. W. F. EDMONDS, Lemoore.

To New Haven, Conn., Yale Army Laboratory School, for instruction, Capt. R. J. PICKARD, San Diego; Lieut. D. C. RAGLAND, Los Angeles.

To report to the commanding general, Western Department, Capt. J. A. RENE, Los Angeles.

To San Francisco, Calif., Letterman General Hospital, Lieut. F. C. BISHOP, Los Angeles. Letterman General Hospital, for instruction, Lieut. F. H. COOKINGHAM, San Francisco.

Colorado

To Camp Pike, Ark., base hospital, Capt. R. W. MENDELSON, La Junta. Base hospital, for instruction, Lieut. R. R. TAYLOR, Pueblo.

To Denver, Colo., Capt. E. L. TIMMONS, Colorado Springs.

To Fort Riley for instruction, Lieut. A. J. BENDER, Salida.

Connecticut

To Camp Greene, N. C., Capt. R. W. LOWE, Ridgefield.

To Camp Holabird, Md., Major E. T. SMITH, Hartford.

To Camp Meade, Md., base hospital, for instruction, Capt. T. S. McDERMOTT, New Haven.

To Fort Oglethorpe for instruction, Capt. A. SCRIMGEOUR, Bridgeport.

To Mineola, N. Y., for instruction, Lieut. W. T. MORRISSEY, Unionville.

To New Haven, Conn., Yale Army Laboratory School, Capt. D. M. LEWIS, New Haven.

To Washington, D. C., St. Elizabeth's Hospital, Lieut. T. F. ERDMAN, Norwich.

District of Columbia

To Camp Sevier, S. C., Capt. H. H. STROMBERGER, Washington.

To Fort Oglethorpe for instruction, Lieut. R. COHEN, Washington.

To New Haven, Conn., Yale Army Laboratory School, for instruction, Capt. G. F. WHITE, Washington.

To Walter Reed General Hospital, D. C., Capt. L. B. T. JOHNSON, Washington.

Florida

To Camp Joseph E. Johnston, Fla., Lieut. N. C. BERRY, Jacksonville.

To Camp Lee, Va., base hospital, Capt. H. M. TAYLOR, Jacksonville.

To Camp Pike, Ark., base hospital, for instruction, Lieut. W. T. LANIER, Homestead.

To New Haven, Conn., Yale Army Laboratory School, for instruction, Lieut. W. W. FARNELLL, Springdale.

Georgia

To Camp Greene, N. C., Lieut. H. L. JOHNSTON, Argyle.

To Camp Jackson, S. C., base hospital, for instruction, Lieut. N. R. THOMAS, Milledgeville.

To Camp Sevier, S. C., base hospital, Lieut. A. G. DeLOACH, Atlanta.

To Fort Oglethorpe for instruction, Capt. J. DAVIS, Toccoa; Lieuts. J. B. CAROTHERS, K. B. DOWD, Atlanta; R. J. PEARSON, Albany; W. H. CABANISS, Athens; W. CONN, Pomona.

Idaho

To Camp Fremont, Calif., base hospital, for instruction, Capt. S. B. DUDLEY, Weiser.

To Fort Riley for instruction, Lieut. M. S. FINK, Kuna.

Illinois

To Ann Arbor, Mich., State Psychopathic Hospital, Lieut. B. SMITH, Jacksonville.

To Camp Custer, Mich., base hospital, for instruction, Lieut. F. P. THOMETZ, Chicago.

To Camp Dodge, Iowa, base hospital, *for instruction*, Lieut. J. A. BRAHAM, Chicago.

To Camp Grant, Ill., base hospital, for instruction, Capts. L. G. VOIGT, Freeport; J. H. BRYANT, Galesburg; Lieut. H. W. VERNON, Chicago.

To Camp MacArthur, Texas, base hospital, for instruction, Lieut. J. RODGE, Apple River.

To Camp McClellan, Ala., Lieut. C. C. HOLMAN, Effingham.

To Camp Pike, Ark., base hospital, Lieut. G. R. McAULIFF, Chicago; base hospital, for instruction, Lieut. R. P. WILSON, Chicago.

To Camp Shelby, Miss., base hospital, for instruction, Capt. J. A. KOCH, Quincy.

To Camp Zachary Taylor, Ky., Lieut. L. M. BEILIN, *Springfield.* Base hospital, Lieut. J. S. *EISENSTAEDT, Chicago.*

To Fort Benjamin Harrison, Capt. T. A. LAWLER, Taylorville.

To Fort Des Moines, Iowa, Lieut. E. V. EYMAN, Evanston.

To Fort Oglethorpe for instruction Capts. F. E. CULVER, J. STEFFENS, Chicago; H. M. ORR, LaSalle; J. K. RETICKER, Quincy; Lieuts. G. S. BETTS, Banner; G. D. ALLEN, A. I. EPSTEIN, O. L. KAHN, R. B. SARGINSON, *S. SHER, S. SINKLER, B. F. TUBERGEN*, Chicago; E. E. BULLARD, Girard; G. E. KNAPPENBERGER, Macomb; I. G. H. LANGUM, Newark; T. B. WILLIAMSON, Opdyke; O. BALENSIEFER, Peru; C. H. HULICK, Shelbyville; G. W. ROSS, Watseka; J. A. CONNELL, Waukegan.

To Fort Riley for instruction, Capts. J. C. WEST, Batavia; S. KLEIN, Chicago; H. M. VORIS, East St. Louis; F. H. FLEEGE, Galena; J. G. BAKER, Mattoon; Lieuts. M. BARBEE, *Barrington;* W. H. ALVIS, Benton; E. C. WEBSTER, Bible Grove; W. J. BYLES, D. F. O'CONNOR, E. E. WILCOX, Chicago; H. P. MacNAMARA, *Granite City; J. C.* RUSSELL, Oakford; F. S. GAY, Rockport; F. B. MOORE, Shablona; D. H. McCARTHY, C. W. MILLIGAN, Springfield.

To Mineola, N. Y., Hazelhurst Field, for instruction, Capt. F. E. BRAWLEY, Chicago.

To New Haven, Conn., Lieut. J. K. MEYERS, *Chicago.*

To San Antonio, Texas, Major J. C. BECK, Chicago.

Indiana

To Camp Grant, Ill., Lieut. B. M. GUNDELFINGER, *Indianapolis.*

To Camp Lewis, Wash., *base hospital, for instruction, Capt.* C. A. BALLARD, Whiting.

To Camp McClellan, Ala., Lieut. K. S. STRICKLAND, Owensville.

To Camp Sherman, Ohio, base hospital, Capt. W. D. ASBURY, Terre Haute.

To Camp Wadsworth, S. C., Lieut. H. W. MacDONALD, New Castle.

To Camp Zachary Taylor, Ky., *Lieut. H. G. HAMER, Indianapolis.* Base hospital, Capt. W. E. TINNEY, Indianapolis; *Lieut.* J. G. BOSTWICK, Mishawaka. For instruction, Capt. E. L. WIGGINS, Indianapolis.

To Fort Oglethorpe for instruction, Capts. R. M. TILTON, Columbus; A. G. SCHLIEKER, East Chicago; W. M. BIGGER, Hammond; B. M. HUTCHINGS, O. R. SPIGLER, Terre Haute; Lieuts. T. J. O'NEILL, Anderson; R. P. HALE, East Chicago; G. W. CRAMM, Hayden; J. C. DANIEL, Indianapolis; S. E. DITTMER, Kouts; T. J. McKEAN, Linngrove; J. A. GIBBONS, Mitchell; R. A. ANDERSON, Vincennes.

To Fort Riley for instruction, Capts. T. J. TONER, Gary; H. G. WEISS, Rockport; Lieuts. W. K. ADAIR, Crothersville; D. R. JOHNS, *East* Chicago; J. A. SCUDDER, Edwardsport; W. H. COLEMAN, Evansville; E. A. PAPE, Indianapolis; C. R. BROWN, Marion; O. L. BELCHER, Monroe City; E. O. ASHER, New Augusta; W. D. LITTLE, Whitestown.

To Jefferson Barracks, Mo., Lieut. H. L. MAGENNIS, *Indianapolis.*

Iowa

To Camp Bowie, Texas, base hospital, for instruction, Lieut. B. B. MILLER, Tabor.

To Camp Dodge, Iowa, base hospital, for instruction, Capt. J. E. SWANSON, Sioux City.

To Camp Grant, Ill., for instruction, Capt. E. J. HARNAGEL, Des Moines.

To Camp Pike, Ark., base hospital, for instruction, Capt. E. CHRISTY, Hastings.

To Camp Shelby, Miss., base hospital, Lieut. C. WATKIN, Sioux City.

To Camp Sheridan, Ala., base hospital, for instruction, Lieut. R. E. PARRY, Scranton.

To Fort Oglethorpe for instruction, Capts. W. H. SEYMOUR, Charles City; J. L. SCRIPTURE, Clarksville; H. E. MEYER, Hampton; Lieut. C. J. O'KEEFE, Marble Rock.

To Fort Riley for instruction, Capts. C. M. CAMPBELL, Decorah; W. S. CARPENTER, A. P. STONER, Des Moines; W. H. WORLEY, Nodaway; H. J. BRACKNEY, Sheldon; H. M. AUSTIN, Wellman; Lieuts. F. E. STRICKLING, Birmingham; T. McMAHON, Iowa City; T. H. CHESNUTT, Mount Pleasant.

To Walter Reed General Hospital, D. C., Capt. J. M. KILBORNE, Sioux City.

Kansas

To Camp Dodge, Iowa, base hospital, for instruction, Capt. C. A. PARKER, Maize.

To Camp MacArthur, Texas, base hospital, for instruction, Capt. W. C. CHANEY, Independence.

To Camp Pike, Ark., base hospital, for instruction, Lieut. C. D. MILLS, Freeport.

To Fort Oglethorpe for instruction Capt. J. T. REID, Iola; Lieuts. P. A. LOYD, Culver; D. L. MORGAN, Emporia; A. R. HATCHER, Wellington.

To Fort Riley for instruction, Capts. T. E. SMITH, Independence; R. W. JAMES, Winfield; Lieuts. H. L. GALLOWAY, Anthony; E. D. TANQUARY, Bronson; R. ALGIE, Linn; O. W. N. AUSTIN, Mayette; H. M. BENTLEY, Sterling; G. R. LITTLE, Wichita.

Kentucky

To Camp Beauregard, La., Lieut. T. C. PIERSON, Fort Thomas.

To Camp Dodge, Iowa, Lieut. W. T. BRIGGS, Lexington.

To Camp Greene, N. C., Lieut. J. H. JEFFRIES, Union City.

To Camp Hancock, Ga.; base hospital, for instruction, Lieut. J. W. YORK, Lucas.

To Camp Meade, Md., Lieuts. E. D. BURNETT, Anchorage; F. EDWARDS, Horse Cave.

To Camp Pike, Ark., base hospital, for instruction, Lieut. A. H. FALCONER, Louisville.

To Camp Sevier, S. C., Capt. P. G. KEENEY, Bellevue; Lieuts. L. J. SPICKARD, Fredonia; L. RUDOLPH, Kevil; J. B. LUKINS, Louisville; O. F. SHEWMAKER, *Waddy.*

To Camp Zachary Taylor, Ky., Lieuts. F. H. BUSSEY, H. M. LIMBACH, Louisville.

To Fort Oglethorpe for instruction, Capts. F. M. GAINES, Carrollton; R. T. ANDERSON, R. G. E. HAYMOND, I. T. HOUCK, Louisville; F. P. STROTHER, Madisonville; C. D. O'HARA, Williamstown; *Lieuts.* S. B. NUNNELLEY, Bullettsville; T. E. CRAIG, Colesburg; C. J. HARRIS, *Covington; J. F.* PENNINGTON, Ford; B. I. PAUL, Fort Thomas; W. J. SHELTON, *Hickory;* A. C. WILLMOTT, Hutchison; J. E. H. WILLIS, Lexington; H. G. PETRIE, E. C. REDMON, Louisville; E. SWETNAM, Paris; V. R. COMBS, Parvin; R. M. PHELPS, Red House; J. F. GLASSCOCK, Sonora; R. M. FILIATREAU, Sorgho; S. MULLINS, Wingo.

To Fort Riley for instruction, Major G. C. LEACHMAN, Louisville; Capt. C. O. *NEFF, Louisville; Lieuts. H. D. NEWMAN*, Drakesboro; R. P. CRAWFORD, Hazel; W. H. ROSENFIELD, Louisville; O. F. HUME, Mackville; O. C. HENRY, Minerva.

To report to the commanding general, Southeastern Department, Capt. M. McDOWELL, Cynthiana.

Louisiana

To Camp Beauregard, La., Lieut. B. A. NORMAN, Minden.

To Camp Shelby, Miss., base hospital, for instruction, Capt. A. B. NELSON, Shreveport.

To Fort Oglethorpe for instruction, Capt. W. H. AIKEN, New Orleans; Lieuts. J. M. OGLESBY, *Alexandria;* E. F. SALERNO, New Orleans; W. F. BROOKS, Vinton.

Maine

To Camp Devens, Mass., base hospital, Capt. M. C. WEBBER, Portland.

To Camp Dix, N. J., base *hospital*, *Capt. J. E.* GRAY, Portland.

To Fort Oglethorpe for instruction, Capt. L. L. HILLS, Westbrook; Lieut. L. J. DUMONT, Lewiston.

To Fort Riley for instruction, Capt. I. E. MABRY, Bridgeton.

Maryland

To Camp Jackson, S. C., Lieut. R. R. *DILLER, Detour.*

To Camp Meade, Md., base hospital, for instruction, *Capt.* C. W. VEST, *Baltimore.*

To Camp Sevier, S. C., base hospital, for instruction, Capt. E. H. TEETER, Baltimore.

To Camp Shelby, Miss., base hospital, Lieut. E. V. COOLAHAN, Baltimore.

To Camp Wadsworth, S. C., base *hospital*, Lieut. M. L. DILLON, Baltimore.

To Fort Oglethorpe for instruction, Lieuts. O. S. LLOYD, W. D. WISE, Baltimore; H. B. McDONNELL, College Park.

Massachusetts

To Camp Devens, Mass., Capts. A. E. JOSLYN, *Lynn;* C. J. HUYCK, West Brookfield; Lieuts. E. J. MONAHAN, Boston; J. F. KRASNYE, *Lowell.* Base hospital, Capt. W. J. LEONARD, Springfield.

To Camp Gordon, Ga., base hospital, Capt. G. *DALTON*, Springfield.

To Camp Meade, Md., base hospital, Lieut. *L.* LAZARUS, Worcester.

To Camp Sevier, S. C., Lieut. R. *O.* DODGE, Hyde Park.

To Camp Sheridan, Ala., base hospital, for instruction, Capt. T. E. CAULFIELD, Woburn.

To Fort Oglethorpe for instruction, Capts. J. L. BACON, Southboro; W. A. HOSLEY, R. H. PECK, Springfield; Lieuts. *L. O.* WHITMAN, Amherst; J. R. AGNEW, Chicopee; T. *R.* DONOVAN, Fitchburg; J. H. FARR, Holyoke; J. E. TELLIER, North *Attelboro;* T. F. HENRY, Salem; R. W. SHEEHY, *Winchester;* L. H. POTE, Winter Hill.

To Mineola, N. Y., for instruction, Lieut. P. J. D. HALEY, Medford.

To New Haven, Conn., Capt. J. M. KELLY, Boston.

To Newport News, Va., Lieut. A. GRASSO, Springfield.

Michigan

To Ann Arbor, Mich., State Psychopathic Hospital, Capt. F. S. BACHELDER, Pontiac.

To Camp Cody, N. M., base hospital, for instruction, Lieut. C. E. VREELAND, Detroit.

To Camp Custer, Mich., Capt. S. A. BUTLER, Pontiac.

To Camp Grant, Ill., Lieut. G. C. HARDY, *Detroit.*

To Camp McClellan, Ala., base hospital, Lieut. R. G. JAMES, Detroit.

To Fort Oglethorpe for instruction, Capts. B. D. PARKER, Detroit; A. J. REYNOLDS, Flint; A. LEENHOUTS Holland; G. M. JOHNSON, Traverse City; Lieuts. A. H. PEARSON, *Ann Arbor;* J. W. HOVERTER, Evart; H. S. CARR, Niles.

To Fort Riley for instruction, Capt. H. A. SHAFOR, Detroit; Lieuts. S. STAMPA, Flint; C. W. ELLIS, Lansing; W. M. TAYLOR, *Ovid.*

To New Haven, Conn., Capt. A. M. WEHENKEL, Detroit.

Minnesota

To Camp Grant, Ill., base hospital, for instruction, Lieuts. L. A. BARNEY, Duluth; F. E. HUFNAIL, Minneapolis; C. H. ZANDER, St. Paul.

To Camp Meade, Md., Capt. H. O. HAGEN, New Richland.

To Camp Wheeler, Ga., base hospital, Lieut. G. C. DITTMAN, St. Paul.

To Denver, Colo., Capt. E. B. DAUGHERTY, St. Paul.

To Fort Des Moines, Iowa, Lieut. H. W. COVEY, St. Peter.

To Fort Oglethorpe for instruction, Capts. C. L. HANEY, Duluth; O. H. URSTAD, Kiester; B. W. PARROTT, Long Prairie; E. A. KING, F. F. WINSELL, Minneapolis; G. L. GOSSLEE, Moorhead; Lieuts. C. R. SANBORN, Benridge; D. F. NOONAN, Minneapolis; J. P. McDOWELL, St. Cloud; C. G. PERRY, St. Paul; H. G. BLANCHARD, Waseca.

To Fort Riley for instruction, Capts. L. M. BOYD, Alexandria; H. L. ARZT, Jackson; Lieuts. L. M. LOWE, Glyndon; C. S. RAADQUIST, Hibbing; N. E. ATKINSON, Jordan; W. A. PIPER, Mountain Lake; B. A. DOGGETT, Rochester; R. A. BOCK, St. Paul; W. HUMPHREY, Stillwater.

To Mineola, N. Y., Hazelhurst Field, for instruction, Lieut. A. L. KUSSKE, Minneapolis.

Mississippi

To Camp Beauregard, La., Lieut. R. A. HAGGARD, Merigold.

To Camp Joseph E. Johnston, Fla., Lieut. J. C. WALKER, Houlka.

To Camp Logan, Texas, Lieut. J. J. DANNER, Pace.

To Fort Oglethorpe for instruction, Capt. C. M. DAVIS, Laurel; Lieuts. C. C. HIGHTOWER, Hattiesburg; J. C. WHITE, JR., Hazelhurst; T. E. ROYALS, Meridian.

Missouri

To Camp Dodge, Iowa, Capts. J. M. BRADLEY, L. S. LUTON, St. Louis. Base hospital, Capt. H. D. HAMILTON, Kansas City. Base hospital, for instruction, Lieuts. T. E. LILLY, Kansas City.

To Camp Gordon, Ga., base hospital, for instruction, Lieut. C. A. POTTER, St. Joseph.

To Camp Logan, Texas, base hospital, for instruction, Lieut. W. W. FORD, Gordonville.

To Camp Pike, Ark., base hospital, Lieut. W. L. ALLEE, Eldon. Base hospital, for instruction, Lieut. C. L. CONRAD, Pleasant Hill.

To Fort Oglethorpe for instruction, Capts. E. P. HAMILTON, Kansas City; E. M. ROSEBERRY, Neosho; J. D. JAMES, Springfield; R. KRING, B. F. TATE, St. Louis; Lieuts. S. A. RUSSELL, Fairview; C. P. CARTWRIGHT, Hughesville; W. M. SAMS, Kansas City; O. M. KOENIG, St. Louis.

To Fort Riley for instruction, Capts. S. T. BROWNFIELD, Brookfield; F. L. DOD, J. M. WALKER, Kansas City; A. J. CHALKLEY, Lexington; G. C. TRAWICK, St. Louis; Lieuts. S. E. MELUNEY, Agency; J. B. BIRD, D. R. RUSSELL, Kansas City; G. H. KOENIG, St. Louis; J. L. EDMONDSON, Stella; W. S. CLARENBACH, Wright City.

To Mineola, N. Y., for instruction, Lieut. O. E. MEGEE, Moberly.

Montana

To Fort Riley for instruction, Lieuts. J. H. GRAHAM, Billings; J. B. SULLIVAN, Butte.

Nebraska

To Camp Jackson, S. C., base hospital, for instruction, Capt. C. H. NEWELL, Omaha.

To Camp Pike, Ark., base hospital, for instruction, Lieut. C. EMERSON, Lincoln.

To Camp Travis, Texas, base hospital, for instruction, Capt. F. E NAIL, Riverton.

To Fort Riley, Capt. L. D. PILLSBURY, Lincoln; Lieut. A. N. B. LEMOINE, Nelson. For instruction, Capts. H. A. COPSEY, Alliance; R. G. RICH, David City; T. J. KERR, North Platte; Lieuts. G. C. WINTERSON, Omaha; J. C. NEWMAN, Wallace.

To San Antonio, Texas, Lieut. S. O. PITTS, Alda.

New Hampshire

To Camp Devens, Mass., base hospital, for instruction, Lieut. E. L. CHAPMAN, Dover.

To Camp Hancock, Ga., base hospital, Capt. N. B. WEBBER, Manchester.

To Fort Oglethorpe for instruction, Capts. D. M. SHEA, Nashua; B. W. CARR, Pittsfield.

New Jersey

To Camp Devens, Mass., base hospital, Capt. W. J. DUCKETT, Jersey City. Base hospital, for instruction, Capt. E. L. WEST, Trenton.

To Camp Dix, N. J., base hospital, Capt. J. COOK, Bayonne.

To Camp Gordon, Ga., to examine the command for nervous and mental diseases, Capt. E. M. FISHER, Greystone Park.

To Camp Lee, Va., Lieuts. G. W. DISBROW, Newark; A. E. OLPP, West Hoboken. Base hospital, for instruction, Capt. J. H. ORAM, Paterson. For instruction, Capt. W. D. MININGHAM, Newark.

To Camp Meade, Md., Capt. E. B. CLEMENT, Atlantic City; Lieut. W. A. TAYLOR, Trenton. Base hospital, for instruction, Capt. C. A. KEATING, JR., Paterson.

To Camp Zachary Taylor, Ky., base hospital, Lieut. P. LIVINGSTON, East Orange.

To Fort Oglethorpe for instruction, Lieuts. R. J. McDONALD, Butler; G. T. LONBOTHUM, Dunellen; C. F. MERRILL, Highland Park; D. L. RUSSELL, Jersey City; R. STINSON, Paterson; C. S. MILLS, Riverton; R. D. CLIPPINGER, Vineland; I. L. ALLEN, J. M. STEIN, West Hoboken.

To New York, Cornell Medical College, for instruction in roentgenology, Capt. L. A. DENIS, West Hoboken.

To report to the commanding general, Southeastern Department, Capt. E. W. LANDES, Stillwater.

To Washington, D. C., St. Elizabeth's Hospital, Capts. G. PAYNE, Cedar Grove; F. C. HORSFORD, Newark

New Mexico

To Camp Cody, N. M., base hospital, for instruction, Lieut. A. A. DEARDUFF, Lovington.

New York

To Camp A. A. Humphreys, Capt. H. B. REECE, New York; Lieuts. F. A. M. BRYANT, Mount Vernon; G. M. BRANDT, Seneca Falls.

To Camp Beauregard, La., base hospital, Capt. R. W. GROVER, New York.

To Camp Bowie, Texas, base hospital, Lieut. L. GREENBERG, Brooklyn.

To Camp Devens, Mass., base hospital, for instruction, Capts. F. A. MENDLEIN, Buffalo; C. R. MARSH, Oneonta.

To Camp Dix, N. J., Lieut. S. MALISOFF, New York. Base hospital, Capt. B. W. BIERBAUER; Lieut. T. F. TRUMPP, Brooklyn.

To Camp Gordon, Ga., base hospital, Capt. S. S. HAM, Schenectady.

To Camp Holabird, Md., Lieut. F. BARBER, Rochester.

To Camp Jackson, S. C., base hospital, Major F. H. BARTLETT, New York.

To Camp Joseph E. Johnston, Fla., Lieut. T. A. BRADY, Central Islip.

To Camp Lee, Va., Lieuts. A. S. DEDERICK, Brooklyn; A. REGAN, Buffalo; F. M. CARPENTER, *Rochester.*

To Camp Meade, Md., Lieut. N. A. GOLDSTEIN,, Brooklyn; R. E. KNAPP, New York; A. M. BREAULT, Schenectady. Base hospital, Capts. L. P. BERNSTEIN, New York. Base hospital, for instruction, Capt. W. H. MANSPERGER, Buffalo; Lieut. J. F. BEIERMEISTER, Rochester.

To Camp Sevier, S. C., Lieuts. F. G. CAROW, Brooklyn; H. C. SCHUHR, Buffalo; E. A. JENNINGS, New York; R. V. LAURENCE, Rochester. Base hospital, Lieut. L. N. ANDRES, New York.

To Camp Sherman, O., base hospital, Lieut. J. C. G. REGAN, Jamaica.

To Camp Upton, N. Y., base hospital, for instruction, Capt. W. J. BOTT. Buffalo.

To Camp Wheeler, Ga., base hospital, for instruction, Capt. C. M. NIESLEY, Manhasset.

To Camp Zachary Taylor, Ky., base hospital, for instruction, Lieut. E. J. WENDEL, Rochester.

To Colonia, N. J., Lieut. C. S. BOYD, New York.

To Fort Oglethorpe, for instruction, Capts. H. VAN RENSSELAER, Albany; L. C. AGER, Brooklyn; E. H. VAIL, Churchville; J. R. GRANT, Cincinnatus; E. J. PHILLIPS, Corfu; A. H. RODGERS, Corning; J. J. KLEIN, East Aurora; H. C. POTTER, East Rochester; J. J. COLLIE Geneva; E. C. CHAMBERLIN, I. S. HIRSCH, J. O'DWYER, New York; A. M. JOHNSON, G. C. WHITNEY, Rochester; G. P. PAUL, Round Lake; C. G. RANSON; Schenectady; Lieuts. O. E. WHITE, Akron; J. A. KNELLER, Attica; W. LEHRICH, J. J. O'LOUGHLIN, E. C. PLACE, Brooklyn; R. N. De DOMINICIS, J. HELLER, A. W. PALMER, Buffalo; M. A. LOSEE, Livingstonville; H. A. BASSETT, Lowville; B. CLERY, A. FINE, L. HAUSMAN, B. QUEL, L. SASOVER, W. A. WOVSCHIN, New York; L. S. LANG, Oneonta; J. C. FLYNN, A. R. HURLEY, R. B. PARTRIDGE, W. D. WOLFF, *Rochester*; C. GARDINIER, Schenectady; C. G. LENHART, Spencerport; D. P. MACGUIRE, Staten Island; J. O. SIBBALD, Troy; R. A. ADAMS, Whitestone.

To Greenville, S. C., base hospital, for instruction, Capt. C. C. SICHEL, New York.

To Mineola, N. Y., Hazelhurst Field, for instruction, Capt. J. M. WHEELER, New York.

To New Haven, Conn., Capts. J. GOLDEY, L. KARMIOHL, New York; Lieuts. M. P. FORSTLER, Brooklyn. *Yale Army Laboratory School*, Lieut. F. GUSMAN, Brooklyn.

To Newport News, Va., Capt. B. G. McKILLOP, Gloversville.

To New York, Manhattan Eye and Ear Hospital, Capt. J. D. RICHARDS, New York. Neurological Institute, for instruction, M. R. WATERMAN, Brockport.

To Plattsburg Barracks, N. Y., Capt. C. A. ROSEWATER; Lieut. H. L. DAY, New York.

To Richmond, Va., Capt. H. R. LOHNES, Buffalo.

To Rockefeller Institute, Capt. A. L. MEYER, New York.

To Washington, D. C., St. Elizabeth's Hospital, Lieut. E. A. EVERETT, Middleton.

North Carolina

To Camp Greene, N. C., base hospital, for instruction, Lieut. L. O. GIBSON, Statesville.

To Camp Sevier, S. C., Lieuts. N. S. STIREWALT, Greensboro; H. B. BEST, Wilson.

North Dakota

To Camp Beauregard, La., base hospital, for instruction, Capt. M. W. ROAN, Bismarck.

To Fort Oglethorpe for instruction, Capt. F. W. MACMANUS, Williston.

To Fort Riley for instruction, Capt. W. H. MOORE, Harvey; Lieut. L. R. CRITCHFIELD, Kenmare.

Ohio

To Ann Arbor, Mich., State Psychopathic Hospital, Capt. W. F. MAXWELL; Lieut. P. G. TAIT, Toledo.

To Camp Abraham Eustis, Va., Lieut. V. I. ALLEN, Creston.

To Camp Custer, Mich., Capt. S. S. TUTTLE, Van Wert.

To Camp Grant, Ill., Lieut. J. H. WILMS, Cincinnati. Base hospital, Capt. W. A. MEDLIN, Cleveland.

To Camp Greene, N. C., Lieut. J. A. HUNTER, Cleveland.

To Camp Holabird, Md., Capt. L. A. BUCHMAN, Canton; Lieuts. B. E. MILLER, Akron; R. A. ELLIOT, Alyer.

To Camp Jackson, S. C., Capt. J. PHILLIPS, Cleveland.

To Camp Meade, Md., Capt. F. P. KREIDER, Van Wert; Lieut. W. F. JAMISON, Cleveland.

To Camp Pike, Ark., base hospital, Capts. W. D. WISE, Akron; A. F. FURRER, Cleveland. Base hospital, for instruction, Lieuts. R. L. KUNKLE, Piqua; O. R. KACKLEY, Pleasant City.

To Camp Sevier, S. C., base hospital, for instruction, Lieut. T. A. COSTELLO, Cleveland.

To Camp Shelby, Miss., base hospital, Capt. J. J. LASALLE, Toledo; Lieut. J. T. KENNEDY, Cincinnati.

To Camp Sherman, Ohio, Capt. R. K. UPDEGRAFF, Cleveland; Lieut. J. R. HULBERT, Dayton. Base hospital, Capts. A. L. STEINFELD, Toledo. Base hospital, for instruction, Capts. J. K. TRESSEL, Alliance; C. D. HAUSER, Youngstown.

To Camp Wadsworth, S. C., base hospital, for instruction, Capt. H. C. CRUMRINE, Cleveland.

To Camp Zachary Taylor, Ky., Major J. PRICE, Columbus; Capt. D. O. SHEPPARD, Barnesville; Lieuts. C. S. ANDREWS, Cleveland; J. O. WELCH, Columbus; J. S. ATCHISON, *East Palestine. Base* hospital, Capts. E. W. GURLEY, Cleveland; L. A. WILLOUGHBY, Toledo; Lieut. F. C. TITUS, Toledo. Base hospital, for instruction, Capts. P. F. KING, Alliance; E. KLAUS, Cleveland; Lieut. P. L. RING, Bellaire.

To Fort Oglethorpe, for instruction, Capts. O. W. LOFFER, Degraff; G. D. NICHOLAS, JR., Elyria; H. L. BURDSALL, A. L. SMEDLEY, Hamilton; W. D. HICKEY, Leipsic; J. W. McMURRAY, Marion; S. A. EDWARDS, Middlepoint; C. S. CAMPBELL, Wauseon; Lieuts. J. C. JOHNSON, Ashley; W. E. STEPHENS, Barnesville; W. G. JACOBS, F. F. KRAMER, A. PFEIFFER, Cincinnati; W. E. ALLYN, E. C. GARVIN, C. H. KOCINSKI, F. B. ROSINOKI, Cleveland; J. W. BROBST, Columbus; E. T. HURLEY, Conneaut; G. T. BROWN,

W. ROEHM, Dayton; E. J. BURNETT, Fostoria; E. G. HOLLIDAY, Lore City; L. T. ARTHUR, Montazuma; H. A. CROSSETT, Rossford; U. A. COOKE, Sylvania; L. D. NELSON, The Plains; S. B. ANDREWS, J. B. METZGER, E. F. WARD, Toledo; W. L. JONES, J. M. RANZ, Youngstown.

To Fort Riley for instruction, Lieut. J. K. LARKIN, Dayton.

To New Haven, Conn., Lieut. R. R. RICHISON, Springfield. Yale Army Laboratory School for instruction, Lieut. C. SATER, Cincinnati.

To Newport News, Va., Lieut. N. V. NOBLE, St. Marys.

To Walter Reed General Hospital, D. C., Capt. C. L. IRELAND, Columbus.

Oklahoma

To Camp John Wise, Texas, Lieut. W. B. SMITH, *Fairland.*

To Camp Kelly, Texas, Capt. C. E. DeGROOT, Muskogee.

To Camp Logan, Texas, Capts. J. P. COWMAN, Comanche; H. W. B. McKINNEY, Durant; G. S. WEEVER, Enid; G. R. ECKLES, Holdenville; Lieuts. W. H. VANN, Cement; E. A. LEISURE, Fairland; V. V. GRANT, Miami; R. A. FELT, Tulsa. Base hospital, Lieut. G. M. HOLCOMBE, Edmond.

To Camp Travis, Texas, base hospital, Capt. R. O. EARLY, Ardmore.

To Camp Zachary Taylor, Ky., base hospital, Lieut. H. H. WHITE, Hugo.

To Fort Logan H. Roots, Ark., base hospital, Lieut. R. V. Von CANNON, Miami.

To Fort Oglethorpe for instruction, Capts. K. R. RONE, Elk City; D. A. MYERS, Lawton; J. C. JACOBS, Miami; Lieut. L. HUGHES, Collinsville.

To Fort Riley for instruction, Lieut. T. F. LAIDIG, Drumright.

Oregon

To Camp Lewis, Wash., base hospital, Capt. R. J. CONROY, Medford; Lieut. L. O. CLEMENT, Grante Pass. Base hospital for instruction, Lieut R. C. McDANIEL, Portland.

To Fort Oglethorpe for instruction, Capt. C. E. HILL, Portland.

Pennsylvania

To Baltimore, Md., Johns Hopkins Medical School, Capt. C. E. ESSICK, Reading.

To Camp A. A. Humphreys, Va., Lieuts. H. C. BROWN, Lancaster; J. A. BUCKWALTER, Royersford.

To Camp Devens, Mass., base hospital, Capt. H. WHITE, Sharon.

To Camp Dix, N. J., Lieut. B. F. BISCOE, Philadelphia.

To Camp Grenne, N. C., Capt. C. E. PRICE, Philadelphia; Lieut. B. L. STOLLAR, Fayette City. *Base hospital, for instruction*, Capt. W. B. McKENNA, Pittsburgh.

To Camp Holabird, Md., Capt. C. M. WOODBURN, Towanda.

To Camp Jackson, S. C., Lieut. W. A. CAVE, Pittsburgh. Base hospital, Capt. G. C. KNEEDLER, Pittsburgh. *Base hospital*, for instruction, Capt. W. ANDERSON, Pittsburgh.

To Camp Kearney, Calif., base hospital, for instruction, Capt. F. T. BUDD, Scranton.

To Camp Lee, Va., base hospital, Lieut. A. A. PETERSON, Elizabeth. Base hospital, for instruction, Capt. G. A. VANLENNEP, Philadelphia.

To Camp Meade, Md., Capts. D. M. MYERS, Lancaster; H. M. FINK, *Pittsburgh*; Lieuts. F. A. MURPHY, *Doylestown*; M. W. COX, Kane; H. L. BATES, Philadelphia. Base hospital, Capt. R. S. FREED, Pittsburgh. Base hospital, for instruction, Lieuts. H. S. BALLARD, *McKeesport*; L. L. HUNTER, *Midland*; W. L. SHEARER, Reading; A. T. WALSH, Scranton.

To Camp Sevier, S. C., Capt. B. B. WORMSER, Scranton; Lieut. M. WIANT, Pittsburgh.

To Camp Wadsworth, S. C., base hospital, for instruction, Capt. C. C. MARSHALL, *Sharon.*

To Camp Wheeler, Ga., base hospital, for instruction, Capt. C. B. NOECKER, Scranton.

To Camp Zachary Taylor, Ky., *Capt.* I. D. METZGER, Pittsburgh. Base hospital, Capts. J. C. MARKEL, H. H. TURNER, Pittsburgh.

To Colonia, N. J., Capt. J. A. BOALE, Vendergrift.

To Fort Oglethorpe for instruction, Capts. H. D. JORDAN, Allentown; L. T. MITCHELL, Aspinwall; C. M. COON, Athens; L. C. FAUSOLD, Glenshaw; A. B. KAUFFMAN, Lancaster; M. G. YEAGER, Mercer; T. MATLACK, Philadelphia; J. H. CARY, Prosperity; Lieuts. J. C. KELSO, Cannonsburg; T. H. GILLAND, Greencastle; C. E. RINK, Indiana; P. R. DEEMAR, Manorville; J. G. WARNER, Monongahela; J. M. CONWAY, Pittsburgh; S. J. SONDHEIM, Reading; L. G. REDDING, Scranton; S. B. GEISE, Sunbury; J. M. HESS, Tylersburg; W. F. WHITE, Wellsboro.

To Fort Riley for instruction, Lieut. S. A. QUINN, Allentown.

To New Haven, Conn., Yale Army Laboratory School for instruction, Lieut. G. D. HEIST, Philadelphia.

To Newport News, Va., Lieuts. J. M. WEAVER, Allentown; J. C. KIBLER, Corry; S. S. CARRIER, D. L. SIMON, Pittsburgh.

To Richmond, Va., Capts. J. G. ALTER, New Kensington; F. KENWORTHY, Pittsburgh.

To Rockefeller Institute for instruction in special chemical methods, Lieut. J. ROSENBLOOM, Pittsburgh.

To Washington, D. C., Major G. P. MULLER, Philadelphia; St. Elizabeth's Hospital, Lieuts. J. M. GRIST, Chester; R. NEBINGER, Danville; I. J. ISRAEL, Monessen.

Porto Rico

To Camp Las Casas, P. R., Capt. J. M. RODRIGUEZ, Barranquitas; Lieut. J. R. GONZALES, San Juan. Base hospital, *for instruction*, Lieut. W. R. WATSON, San Juan.

Rhode Island

To Camp Devens, Mass., base hospital, for instruction, *Lieut. J. J.* KENNEY, Providence.

To Camp Meade, Md., Lieut. W. S. STREKER. Base hospital, for instruction, Lieut. E. S. CAMERON, Providence.

To Fort Oglethorpe for instruction, Capt. R. C. ROBINSON, Providence.

To Richmond, Va., Capt. F. P. CONWAY, Newport.

South Carolina

To Fort Oglethorpe for instruction, Lieuts. J. E. PRESSLEY, Abbeville; I. J. CAMPBELL, Clover; N. T. CLARK, Spartanburg.

To New Haven, Conn., Lieut. N. B. HEYWARD, Columbia.

South Dakota

To Camp Dodge, Iowa, base hospital, Capt. C. A. BUTLER, Dell Rapids. Base hospital, for instruction, Capt. W. O. LEACH, Huron.

To Fort Des Moines, Iowa, Capt. F. V. WILLHITE, Yankton.

To Fort Oglethorpe for instruction, Lieut. O. B. SHEETS, Carthage.

To Fort Riley for instruction, Capt. P. R. BURKLAND, Vermillion.

Tennessee

To Camp Gordon, Ga., base hospital, for instruction, Capt. R. L. SANDERS, Memphis.

To Camp McClellan, Ala., Lieut. W. P. SUMNERS, Harms.

To Fort Benjamin Harrison, Ind., base hospital, Capt. G. R. LIVERMORE, Memphis.

To Fort Oglethorpe for instruction, Capts. L. A. HAUN, Knoxville; H. L. ALEXANDER, McKenzie; E. D. MITCHELL, Memphis; Lieuts. S. E. McDONALD, Bells; A. G. HAYES, Coldwater; T. D. CLOYD, Mosheim.

Texas

To Camp Bowie, Texas, base hospital, Lieut. G. T. BLACKWELL, Gorman.

To Camp Fremont, Calif., base hospital, Capt. W. D. JONES, Dallas.

To Camp Logan, Texas, Capt. L. G. WITHERSPOON, El Paso; Lieuts. N. R. JACKSON, Manor; R. M. MUNROE, Richmond; E. G. LYONS, Sachse. Base hospital, Lieut. N. LONG, San Antonio.

To Camp MacArthur, Texas, Capt. A. M. SPURGIN, Dallas. Base hospital, for instruction, Lieuts. A. W. NASH, Dallas; J. H. HOLT, Sherman.

To Fort Oglethorpe for instruction, Capt. H. HORNEY, *San Angelo;* Lieuts. L. V. DAWSON, Plainview; H. T. COULTER, Rockdale; T. E. COOK, Temple.

To Fort Riley for instruction, Capt. E. A. DAVIS, Mineral Wells; Lieuts. G. T. HALL, Big Spring; H. D. ROACH, Bogata; E. D. STRONG, El Paso; L. K. BECK, San Antonio; E. STIRLING, Sulphur Springs.

To Newport News, Va., Capt. J. B. LEGNARD, Jr., Houston.

To San Antonio, Texas, Capt. C. F. HAYES, Fort Worth; Lieut W. W. BLANKENSHIP, Mosheim.

Utah

To Camp Cody, N. M., base hospital, for instruction, Capt. C. R. OPENSHAW, Salt Lake City; Lieut. E. R. MURPHY, Clear Creek.

To Fort Riley for instruction, Lieut. J. C. HARDLE, Garland.

Vermont

To Camp Devens, Mass., base hospital, for instruction, Lieut. H. B. WILSON, White River Junction.

To Fort Oglethorpe for instruction, Lieut. F. E. STEELE, Jr., Waterbury.

Virginia

To Camp Greene, N. C., Lieut. N. A. NICHOLSON, Back Bay.

To Camp Jackson, S. C., Lieut. J. H. BELL, Bridgewater.

To Camp Lee, Va., Lieuts. G. W. JOHNSON, Danville; J. A. STRICKLAND, Norfolk.

To Camp Meade, Md., Lieut. L. S. EARLY, Petersburg.

To Fort Moultrie, S. C., Lieut. R. W. SELBY, Burgess Store.

To Fort Oglethorpe for instruction, Capt. A. C. LANCASTER, Faverdale; Lieut. K. W. HOWARD, University.

To New Haven, Conn., Lieut. N. J. GOULD, Norfolk.

To Newport News, Va., Capt. W. N. BRECKINRIDGE, Fincastle; Lieut. O. L. WATKINS, Rustburg.

Washington

To Camp Kearney, Calif., Capt. J. H. FITZ, Montesano; Lieuts. F. C. HOLGATE, Almira; W. W. DAY, Dayton; C. B. JONES, Everett. Base hospital, for instruction, Lieut. E. J. RHOADES, Pomeroy.

To Camp Lewis, Wash., Capt. N. H. YOUNG, Fort Steilacoom; Lieut. E. NICHOLSON, Seattle. Base hospital, Lieuts. C. H. WEIR, North Yakima; P. J. MAHONE, Seattle. Base hospital, for instruction, Capts. S. D. COFFIN, H. D. DUDLEY, L. W. RENFRO, Seattle.

To Fort Riley, Lieut. A. H. WINKEL, Kittitas. For instruction, Capt. W. M. BROWN, North Yakima.

To San Francisco, Calif., Lieut. P. P. CRIMMINS, Seattle.

West Virginia

To Camp Beauregard, La., base hospital, for instruction, Lieut. R. U. DRINKARD, Wheeling.

To Camp Meade, Md., Lieuts. J. M. BARR, Middleton; T. W. KEITH, Selbyville.

To Camp Wadsworth, S. C., base hospital, Capt. M. B. KELLY, Wheeling.

To Fort Oglethorpe for instruction, Capts. B. KEIFER, Paden City; E. W. GUILFORD, Summerville; Lieut. G. WYATT, White Sulphur Springs.

To Hot Springs, N. C., Capt. H. G. TONKIN, *Martinsburg.*

Wisconsin

To Camp Custer, Mich., *base hospital, for instruction*, Lieuts. H. F. DERGE, Eau Claire; L. E. BERINGER, Plymouth; F. NEE, *Spring* Green.

To Camp Dodge, Iowa, base hospital, for instruction, Capt. G. J. EGAN, LaCrosse.

To Camp Grant, Ill., for instruction, Lieut. J. A. HEARTY, Milwaukee.

To Camp Pike, Ark., base hospital, for instruction, Capt. C. O. LATHAM, Green Bay.

To Fort Oglethorpe for instruction, Capt. E. D. RIGBY, Milwaukee; Lieuts. F. B. WELCH, Janesville; B. F. KOCH, Wauwatosa.

To Fort Riley for instruction, Lieuts. C. W. RICE, Delavan; H. J. HAUBRICK, Oshkosh; R. E. DOERN, Stockbridge.

To New Haven, Conn., Yale Army Laboratory School for instruction, Capt. J. J. SEELMAN, Milwaukee.

Wyoming

To Fort Riley for instruction, Lieuts. H. E. McCOLLUM, Laramie; E. S. LAUZER, Rock Springs.

ORDERS TO OFFICERS OF THE MEDICAL CORPS, U. S. ARMY

Alabama

To Camp Bowie, Texas, base hospital, for instruction, from Fort Oglethorpe, Lieut. C. H. MOORE, Birmingham.

To Fort McPherson, Ga., Lieut. R. H. LISTER, Muscle Shoals.

To Fort Riley to examine the command for nervous and mental diseases, Lieut. A. A. THURLOW, Cullman.

To Fort Sam Houston, Texas, base hospital, for instruction, from Fort Oglethorpe, Capt. J. M. BARFIELD, Lineville.

To Hot Springs, N. C., Lieut. C. H. DRAKE, Birmingham.

To Rockefeller Institute for instruction in the treatment of infected wounds, Lieut. M. J. HEATH, Ensley.

Arizona

To Denver, Colo., from Southern Department, Capt. B. A. WARREN, Leupp.

To Fort Sam Houston, Texas, Capt. G. H. FITZGERALD, Bisbee.

Arkansas

To Camp Crane, Pa., from Rockefeller Institute, Lieut. J. C. SIMPSON, Hamburg.

To Camp McClellan, Ala., base hospital, for instruction, from Fort Oglethorpe, Lieut. W. K. GRAY, Little Rock.

To Camp Pike, Ark., from Camp Bowie, Capt. W. K. SMITH, Hot Springs.

To Fort Oglethorpe for instruction, Lieut. W. F. BALL, Batesville.

To Fort Riley for instruction, Lieut. D. STAPLES, Little Rock.

To New Haven, Conn., Yale Army Laboratory School, for instruction, Capt. I. H. JEWELL, Paris.

California

To Army Medical School for instruction, from Camp Lewis, Lieut. R. W. WILCOX, San Francisco.

To Camp Beauregard, La., from Fort Riley, Capt. H. A. BARCLAY, San Diego.

To Camp Crane, Pa., from Alcatraz, Calif., Capt. F. C. SHURTLEFF, Los Angeles; from Camp Cody, Capt. A. K. BRUMAN, San Francisco; from Camp Fremont, Capts. R. L. BYRON, Los Angeles; E. K. KOPKINS, San Francisco; from Camp Kearney, Capt. G. T. POMEROY, Oakland; from Camp Lewis, Capt. J. R. BROWN, San Francisco; from Fort Oglethorpe, Lieut. A. J. HOLETON, San Diego. Mobile hospital from Camp Kearney, Lieut. R. G. VAN NUYS, Oakland; from San Francisco, Capt. R. G. DUFFICY, San Rafael.

To Camp Custer, Mich., base hospital, Capt. G. H. BRASH, Los Angeles.

To Camp Dodge, Iowa, base hospital, from Camp Lewis, Lieut. T. C. SCHNEERES, Los Angeles.

To Camp Fremont, Calif., as orthopedic surgeon, from San Francisco, Capt. H. V. HOFFMAN, San Francisco.

To Leon Springs, Texas, from Fort Riley, Lieut. W. B. HILL, Long Beach.

To New York, Cornell Medical College, as instructor, from Fort Oglethorpe, Lieut. F. W. H. TAYLOR, San Diego.

To report to the commanding general, Western Department, from Fort McDowell, Capt. T. B. ROCHE, San Francisco.

To Rockefeller Institute for instruction in the treatment of pneumonia, Lieut. M. C. CHENEY, Berkeley.

To San Diego, Calif., Rockwell Field, from Mineola, Capt. J. F. GRANT, San Diego.

To San Francisco, Calif., Letterman General Hospital, from Camp Fremont, Lieut. G. E. MYERS, Agnew.

To Vancouver Barracks, Wash., to examine the troops for tuberculosis, from Camp Fremont, Capt. O. O. YOUNG, Garden Grove.

Canal Zone

To Fort Sam Houston, as department surgeon, from Panama Canal Department, Col. W. H. WILSON.

To New Haven, Conn., Yale Army Laboratory School; for instruction, from Canal Zone, Capt. L. B. BATES, Ancon.

Colorado

To Camp Fremont, Calif., from Camp Lewis, Major A. J. MARKLEY, Denver.

To Camp Gordon, Ga., base hospital, for instruction, from Fort Oglethorpe, Capt. W. A. KICKLAND, Fort Collins.

To Camp Zachary Taylor, Ky., from Fort Oglethorpe, Capt. C. H. WILKINSON, Canon City.

To Denver, Colo., from Fort Logan, Capt. J. C. GORSUCH, Denver.

To Mineola, N. Y., Hazelhurst Field, for instruction, from Camp Dick, Lieut. M. D. BROWN, Craig.

To San Francisco, Calif., Letterman General Hospital, from Talmadge, Calif., Lieut. H. E. FARNSWORTH, Denver.

Connecticut

To Camp Dick, Texas, to assist the flight surgeon, from Walter Reed General Hospital, Capt. A. E. BRIDES, New Haven.

To Camp Sevier, S. C., to examine drafted men for nervous and mental diseases, from Camp Jackson, Lieut. S. E. WELD, Hartford.

To Hot Springs, N. C., for instruction, Lieut. L. G. BEARDSLEY, Bridgeport.

To Rockefeller Institute for instruction, Lieut. W. A. MONAGHAN, Hartford.

District of Columbia

To Camp Beauregard, La., from Eastern Department, Major WILLIAM E. HALL.

To Camp Bowie, Texas, from Washington, Lieut.-Col. H. B. McINTYRE.

To Camp Dix, N. J., from Washington, Lieut.-Col. L. R. POUST.

To Camp Dodge, Iowa, from Southern Department, Major L. D. CRUICE.

To Vancouver Barracks, Wash., Col. R. G. EBERT.

To Walter Reed General Hospital, D. C., from duty as a contract surgeon, Lieut. R. H. LEECE, Washington.

To Washington, D. C., from Southern Department, Col. J. B. CLAYTON. Army War College, for instruction, and on completion *to Camp Greene, N. C.,* from Army Medical School, Lieut.-Col. G. H. SCOTT.

Florida

To Camp Crane, Pa., mobile hospital, from Fort Oglethorpe, Lieut. E. C. BRUNNER, Miami.

To Camp Gordon, Ga., from Camp Sheridan, Capt. M. E. HECK, St. Augustine.

To Camp Sherman, Ohio, as assistant to division surgeon, from Camp Gordon, Major H. O. BLACK, Jacksonville.

To French Lick, Ind., from Camp Wheeler, Capts. E. T. SELLERS, Jacksonville; A. M. AMES, Pensacola.

To New York, Bellevue Hospital, for instruction, from Fort Oglethorpe, Capt. L. A. PEEK, West Palm Beach.

Georgia

To Camp A. A. Humphreys, Va., as commanding officer of base hospital, from Fort Oglethorpe, Major J. M. GREER.

To Camp Crane, Pa., from Fort Des Moines, Capt. W. L. COOKE, Columbus.

To Camp Devens, Mass., from Camp Forrest, Lieut. J. P. JONES, Savannah.

To Camp Lee, Va., base hospital, for instruction, from Fort Oglethorpe, Lieut. C. L. PEACOCK, Atlanta.

To Camp Pike, Ga., base hospital, Lieut. H. T. EDMONDSON, Berlin. Base hospital, for instruction, from Fort Oglethorpe, Lieut. C. USHER, Savannah.

To Camp Sevier, S. C., Capt. N. CRAIG, Atlanta.

To Camp Sherman, Ohio, base hospital, Lieut. D. D. WALKER, Macon.

To Camp Wadsworth, S. C., as tuberculosis examiner, from New Haven, Lieut. A. ELKIN, Atlanta. To examine the troops for cardiovascular diseases, from Lakewood, Major J. W. DANIEL, Savannah.

To Camp Wheeler, Ga., base hospital, Lieut. E. G. ADAMS, Greensboro.

To Camp Zachary Taylor, Ky., base hospital, Lieut. E. ISEMAN, Savannah.

To Detroit, Mich., from Atlanta, Lieut. C. O. MIDDLEBROOKS, Bogart.

Idaho

To Boston, Mass., Harvard Graduate School of Medicine, for instruction, from Fort Riley, Lieut. R. FALK, Boise.

To Camp Crane, Pa., from Fort Oglethorpe, Capt. J. ASPRAY, Moscow.

Illinois

To Austin, Texas, State University, from Fort Sill, Lieut. P. H. ROWE, Chicago.

To Camp Abraham Eustis, Va., camp hospital, for instruction, from Fort Oglethorpe, Lieut. F. L. BROWN, Oak Park.

To Camp Beauregard, La., base hospital, for instruction, from Fort Oglethorpe, Lieut. J. C. GARARD, Chicago.

To Camp Bowie, Texas, base hospital, for instruction, from Fort Riley, Capt. M. PFEIFFENBERGER, Alton.

To Camp Crane, Pa., from Fort Oglethorpe, Capts. G. L. DAVENPORT, H. SCOTT, Chicago; R. C. DANFORD, Pana; from the Surgeon-General's Office, Lieut. A. S. BAILEY, Chicago. Mobile hospital, from Fort Oglethorpe, Capt. W. H. GILMORE, Mount Vernon; Lieuts. L. H. HILLS, D. J. MARGOLIS, Chicago.

To Camp Custer, Mich., base hospital, from Camp Grant, Lieuts. S. J. PEARLMAN, H. S. SULLIVAN, Chicago; from Camp Sherman, Capt. B. R. BEERS, Chicago; from Camp Zachary Taylor, Lieut. R. KING, Olney. Base hospital, for instruction, Lieut. B. W. CLAYPOOL, Chicago; from Fort Oglethorpe, Lieut. D. N. EISENDRATH, Chicago.

To Camp Devens, Mass., from Army Medical School, Lieut. C. E. BERGIN, Chicago. Base hospital, from Mineola, Capt. N. S. DAVIS, 3rd, Chicago.

To Camp Dix, N. J., base hospital, for instruction, from Fort Oglethorpe, Lieut. S. F. KUBALA, Chicago.

To Camp Dodge, Iowa, as assistant to camp surgeon, from Fort Oglethorpe, Capt. J. A. KAPPLEMAN, Chicago.

To Camp Gordon, Ga., from Fort Oglethorpe, Capt. W. W. HOYT, Chicago. Base hospital, from Camp Wadsworth, Lieut. L. E. MEE, Wilmette.

To Camp Grant, Ill., from Army Medical School, Lieuts. E. H. ALBERS, Chicago; F. E. BEST, Freeport. Base hospital, for instruction, Lieut. P. F. SNYDER, Chicago.

To Camp Hancock, Ga., base hospital, from Fort Oglethorpe, Lieut. A. J. WEIRICK, Marseilles. Base hospital, for instruction, from Fort Oglethorpe, Capt. C. E. GREER, Charleston.

To Camp Joseph E. Johnston, Fla., from Fort Oglethorpe, Capt. S. ROSENBLATT, Chicago. Base hospital, for instruction, from Fort Oglethorpe, Lieut. J. T. GREGORY, Chicago.

To Everman, Texas, Barron Field, as flight surgeon, from Mineola, Capt. G. W. MOSHER, Chicago.

To Fort Jay, N. Y., for consultation and on completion, *to Washington, D. C.,* for consultation, from Camp Lewis, Major H. M. ADLER, Chicago.

To Fort McPherson, Ga., from Fort Oglethorpe, Capt. J. R. ERNST, Peoria.

To Fort Oglethorpe, base hospital, from Camp Meade, Lieut. J. EISENSTAEDT, Chicago. Evacuation hospital, from Camp Grant, Lieut. R. H. STENGER, Kankakee. For instruction, Capts. G. FITZPATRICK, Chicago; H. G. WRIGHT, DeKalb; Lieuts. P. M. HUNTER, F. REINSCH, Chicago; from duty as an enlisted man, Lieut. C. G. HAIDOPOULOS, Chicago.

To Fort Riley for instruction, Lieuts. S. E. OXFORD, Cave-in-Rock; J. I. MARTIN, G. L. OSTROWSKEY, Chicago; A. O. MOORE, Highland Park.

To Fort Snelling, Minn., base hospital, from Fort Des Moines, Capt. W. W. COLEMAN, Lincoln.

To Garden City, N. Y., from Mineola, Lieut. T. A. WAYLAND, Dallas City; from St. Paul, Lieut. F. L. POWERS, Chicago.

To Hoboken, N. J., from Camp Zachary Taylor, Capt. N. KERR, Chicago; from Eastern Department, Capt. T. J. O'MALLEY, Chicago.

To Hot Springs, N. C., from Fort Oglethorpe, Lieut. H. M. WILSON, Granville; from Richmond, Capt. A. B. KEYES; Chicago.

To Mineola, N. Y., Hazelhurst Field, from Camp Custer, Capt. N. C. GILBERT, Chicago. Hazelhurst Field, for instruction, from St. Paul, Major O. YARNELL, Decatur.

To New Haven, Conn., Yale Army Laboratory School, for instruction, Capt. F. M. WOOD, Chicago.

To New York, Bellevue Hospital, for instruction, from Fort Oglethorpe, Lieut. C. W. SEEVER, Sheldon.

To Richmond Va., from Camp Pike, Major C. H. McKENNA, Chicago.

To Urbana, Ill., from Mt. Clemens, Lieut. R. F. KNOLL, Chicago.

The following order has been revoked: *To Camp Grant, Ill.*, base hospital, Lieut. H. S. SULLIVAN, Chicago.

Indiana

To Camp Bowie, Texas, base hospital, for instruction, from Fort Oglethorpe, Capt. M. I. ROSENTHAL, Fort Wayne.

To Camp Crane, Pa., from Camp Custer, Lieuts. J. A. M. ASPY, Indianapolis; R. A. GILMORE, Michigan City; from Camp Devens, Lieut. H. C. BRAUCHLA, Indianapolis; from Camp Zachary Taylor, Lieut. C. N. FRAZIER, Indianapolis. Mobile hospital, from Camp Kearney, Capt. E. B. CHENOWETH, Nineveh.

To Camp Custer, Mich., base hospital, Capt. R. L. SENSENICH, South Bend; from Camp Sherman, Lieuts. E. B. RUSCHLIN, Lafayette; W. O. FRELIGH, Terre Haute; from Mineola, Capt. E. D. WALES, Indianapolis.

To Camp Dix, N. J., from Fort Oglethorpe, Capt. S. McGAUGHEY, Indianapolis.

To Camp Gordon, Ga., base hospital, from Camp Sevier, Capt. R. G. HENDRICKS, Indianapolis.

To Camp Greene, N. C., base hospital, from Camp Wadsworth, Capt. E. R. CHURCHELL, Richmond; Lieut. A. F. SCHULTZ, Lafayette.

To Camp Jackson, S. C., base hospital, from Fort Riley, Major G. W. NEWELL, Peru.

To Camp Lee, Va., base hospital, from Camp Sherman, Capt. F. TERFLINGER, Logansport.

Iowa

To Camp Crane, Pa., from Rockefeller Institute, Lieut. M. T. MORTON, Iowa City. Mobile hospital, from Camp MacArthur, Capt. E. S. EVANS, Grinnell.

To Camp Gordon, Ga., base hospital, from Camp Sevier, Capt. J. R. BRADY, Sioux City.

To Camp Lee, Va., from Fort Oglethorpe, Lieut. A. H. KONIGMACHER, Council Bluffs.

To Camp Sherman, Ohio, base hospital, from Camp Dodge, Capt. G. T. McCAULIFF, Webster City; Lieut. R. W. WOOD, Newton. Base hospital for instruction, Lieut. L. B. E. OLIVER, Sigourney.

To Camp Travis, Texas, from Fort Riley, Lieut. H. S. DETCHON, Victor.

To Camp Wheeler, Ga., from Camp Meade, Capt. G. R. HILL, Charter Oak.

Kansas

To Camp Pike, Ark., base hospital, from Camp Beauregard, Capt. L. S. COPLAN, Wellington.

To Camp Sheridan, Ala., from Camp Gordon, Capt. E. A. DRAKE, Natoma.

To Camp Travis, Texas, from Fort Riley, Capt. A. A. SHELLEY, Galena.

To Fort Benjamin Harrison, base hospital, from Camp Dodge, Lieut. F. P. MANN, Valley Falls; from Camp Travis, Capt. G. H. HOBSON, Kansas City.

To Fort Oglethorpe for instruction, from Fort Riley, Lieut. O. R. BRITTAIN, Salina.

To Fort Riley for instruction, from Walter Reed General Hospital, Lieut. W. L. BUTLER, Stafford.

To Fort Sheridan, Ill., base hospital, from Camp Bowie, Lieut. E. M. IRELAND, Coldwater.

Kentucky

To Camp Crane, Pa., mobile hospital, from Camp MacArthur, Lieut. J. S. McGINNIS, Lexington.

To Camp Greene, N. C., Lieut. O. A. EDDLEMAN, Benton.

To Camp Lee, Va., from North Charleston, S. C., Capt. G. W. HILL, Springfield.

To Camp Meade, Md., from Fort Meyer, Lieut. E. D. TURNER, Cave City.

Louisiana

To Camp MacArthur, Texas, base hospital, for instruction, from Fort Oglethorpe, Lieut. R. C. WEBB, Rayne.

To New York, Bellevue Hospital, for instruction, from Fort Oglethorpe, Capt. L. O. CLARK, Lafayette.

To report to the commanding general, Southeastern Department, Lieut. V. J. FUNDERBURK, Monroe.

Maine

To Camp Crane, Pa., from Fort Oglethorpe, Capt. J. S. BRAGG, Winter Harbor.

To Camp Gordon, Ga., base hospital, for instruction, from Fort Oglethorpe, Lieut. H. C. BUNDY, Lake View.

To Camp Meade, Md., evacuation hospital, from Fort Oglethorpe, Lieut. N. BISSON, Waterloo.

To Camp [illegible] as tuberculosis examiner, from New Haven, Capt. [illegible] Bangor.

To Charleston, [illegible] Oglethorpe, Lieut. H. M. HOWES, Portland.

To Hoboken, N. J., from Camp Jackson, Capt. H. M. CHAPMAN, Bangor.

Maryland

To Camp Crane, Pa., from Fort Oglethorpe, Capt. P. WROTH, Hagerstown.

To Camp Jackson, S. C., base hospital, from Camp Sevier, Lieut. B. E. HARRELL, Baltimore.

To Camp Pike, Ark., base hospital for instruction, from Fort Oglethorpe, Lieut. H. H. STANSBURY, Baltimore.

To Camp Travis, Texas, to examine the troops for cardiovascular diseases, from Camp Jackson, Lieut. I. J. FEINGLOZ, Baltimore.

To Colonia, N. J., from Hoboken, Capt. R. FAYERWEATHER, Baltimore.

To Fort Des Moines, Iowa, base hospital, for instruction, from Fort Oglethorpe, Lieuts. T. S. MOISE, E. NOVAK, Baltimore.

To Rockefeller Institute for instruction in the treatment of infected wounds, Lieut. W. A. DARBY, Baltimore.

Massachusetts

To Camp Jackson, S. C., base hospital, for instruction, from Fort Oglethorpe, Lieut. W. A. BISHOP, North Abingdon.

To Camp Lee, Va., from Biltmore, N. C., Lieut. F. A. STEVENS, Boston.

To Camp Meade, Md., base hospital, *for instruction*, Lieut. G. M. SHIPTON, Pittsfield.

To Camp Sevier, S. C., base hospital, for instruction, from Fort Oglethorpe, Lieut. S. P. WILDE, New Bedford.

To Camp Sherman, Ohio, base hospital, from Camp Lee, Lieut. M. M. HAMBURG, Waltham.

To Camp Wadsworth, S. C., from Fort Oglethorpe, Lieut. F. C. SHULTIS, Leominster. As tuberculosis examiner, *from* Fort Oglethorpe, Lieut. W. L. TUCKER, Hinsdale.

To Camp Zachary Taylor, Ky., from Fort Oglethorpe, Lieut. J. P. A. BACON, Lawrence.

To Fort Myer, Va., from Camp Wheeler, Lieut. F. C. LEAVITT, Belmont.

To Fort Oglethorpe, evacuation hospital, from Camp MacArthur, Lieut. B. L. ASHMORE, Palmer. For instruction, from Camp Meade, Lieut. B. D. PAUL, Boston.

To Ithaca, N. Y., Cornell University, *from* Everman, Texas, Lieut. E. E. LIGHT, East Long Meadow.

To New Haven, Conn., Yale Army Laboratory School, for instruction, from Atlanta, Ga., Major H. L. CONNER, Haverhill.

To Rockefeller Institute for instruction in the treatment of infected wounds, Lieuts. J. H. GALLAGHER, Chicopee; L. C. DURSTHOFF, Lowell.

The following orders have been revoked: *To Camp Crane, Pa.*, from Rockefeller Institute, Lieut. A. B. LYON, Boston; *to Camp Jackson, S. C.*, base hospital, Major F. R. JOUETT, Cambridge.

Michigan

To Austin, Texas, State University, from Fort Sill, Lieut. R. S. GOUX, *Detroit*.

To Camp Beauregard, La., base hospital, *from* Camp Shelby, Capt. B. F. GREEN, South *Hillsdale*.

To Camp Crane, Pa., *from* Camp Custer, Lieut. R. A. MORTER, Kalamazoo; *from* Camp *Dodge*, Lieut. J. K. ORMOND, Detroit; from Camp Meade, Lieut. W. B. ANDERSON, Jackson; from Hoboken, N. J., Capt. M. L. CUSHMAN, Lansing.

To Camp Custer, Mich., base hospital, Lieut. W. H. NILES, Marshall; from Camp Sherman, Capt. F. C. WARNSHUIS, Grand Rapids.

To Camp Dodge, Iowa, base hospital, from Camp Beauregard, Capt. B. FRIEDLANDER, *Saginaw*.

To Camp Sherman, Ohio, base hospital, for instruction, Capt. L. S. RAMSDELL, Manistee.

To Camp Wadsworth, S. C., base hospital, for instruction, from Fort Oglethorpe, Capt. C. GEORG, Jr., Ann *Arbor*.

To Fort Oglethorpe for instruction, Capt. W. C. White, Yale.

To Princeton, N. J., *Princeton* University, from South San Antonio, Lieut. R. F. BOONSTRA, Detroit.

To Raleigh, N. C., Lieut. A. J. DROLETT, Lansing.

Minnesota

To Berkeley, Calif., University of California, from Houston, Lieut. R. A. JOHNSON, Minneapolis.

To Camp Sherman, Ohio, base hospital, from Camp Custer, Lieut. D. E. NELSON, Brainerd.

To Camp Travis, Texas, from Fort Riley, Capts. J. A. GATES, Kenyon; C. C. WALKER, Lamberton.

To Camp Zachary Taylor, Ky., base hospital, from Fort McPherson, Major W. M. CHOWNING, Minneapolis.

To Fort Benjamin Harrison, base hospital, *from* Camp Grant, Capts. M. M. GHENT, M. C. WELCH, St. Paul.

To Fort Bliss, Texas, from Camp Bowie, Lieut. H. E. CANFIELD, Willmar.

To Fort Oglethorpe, evacuation hospital, from Ann *Arbor*, Lieut. W. B. MARTIN, Fergus Falls.

To Fort Riley for instruction, Lieut. H. A. MOLANDER, St. Paul.

To Lake Charles, La., Gerstner *Field*, from Mineola, Lieut. P. B. GILLESPIE, Minneapolis.

The following order has been revoked: *To Camp Meade, Md.*, from Camp Lee, Major J. C. SESSIONS, Minneapolis.

Mississippi

To Camp Zachary Taylor, Ky., base hospital, *for* instruction, from Fort Oglethorpe, Lieut. J. B. HIRSCH, Greenville.

Missouri

To Biltmore, N. C., from Fort Oglethorpe, Lieut. K. R. BARNUM, Sedalia.

To Camp A. A. Humphreys, Va., base hospital, for instruction, from Fort Oglethorpe, Lieut. J. D. BOEHM, Monett.

To Camp Crane, Pa., from Fort *Oglethorpe*, Capt. W. J. SHELTON, DeKalb; from the Surgeon-General's Office, Major H. G. WYER, Kirkwood.

To Camp Custer, Mich., for instruction in the *base* hospital, and on completion *to his proper station*, from Camp Hancock, Major R. W. SCHLUETER, St. Louis.

To Camp Gordon, Ga., from Army Medical School, Lieut. B. W. LEWIS, St. Louis. Base hospital, from Camp Travis, Capt. J. D. PORTERFIELD, Jr., Cape Girardeau.

To Camp Grant, Ill., from Army Medical School, Lieuts. J. H. MURPHY, S. J. WOLFERMAN, St. Louis. As camp psychiatrist, from Jefferson Barracks, Lieut. J. F. McFADDEN, St. Louis.

To Camp Greene, N. C., base hospital, from Fort Porter, Capt. F. L. LONG, Farmington.

To Camp Hancock, Ga., [illegible] hospital, *for* instruction, from Fort Oglethorpe, Capt. W. J. [illegible], [illegible]

To Camp Joseph E. Johnston, Fla., to examine the *command* for nervous and mental diseases, from Camp Pike, Capt. H. S. MAJOR, Fulton.

To Camp Lewis, Wash., from Camp Kearney, Major R. S. BRYAN, St. Louis.

To Camp McClellan, Ala., base hospital, *for* instruction, from Fort Oglethorpe, Lieut. W. J. SPARHAWK, St. Louis.

To Camp Sevier, S. C., base hospital, *for* instruction, *from* Fort Oglethorpe, Capt. H. E. HAPPEL, St. Louis.

To Camp Sheridan, Ala., base hospital, for instruction, from Fort Oglethorpe, Capt. J. R. GREEN, Independence. For instruction, Lieut. A. R. COHN, Kansas City.

To Camp Sherman, Ohio, base hospital, for instruction, from Fort Riley, Lieut. P. LUX, Kansas City.

To New York, Bellevue Hospital, for instruction, from Fort Oglethorpe, Capt. F. J. MOENNIGHOFF, Odessa. Neurological Institute, for instruction, from Fort Riley, Lieut. L. E. MONROE, Bonne Terre.

The following order has been revoked: *To Camp Shelby, Miss.*, from Fort Oglethorpe, Capt. R. H. MORRIS, Kansas City.

Montana

To Camp Custer, Mich., base hospital, for instruction, from Fort Sheridan, Ill., Major R. HORSKY, Helena.

To Camp Dodge, Iowa, base hospital, for instruction, Capt. A. E. Longeway, Great Falls.

To Cape May, N. J., base hospital, from Rockefeller Institute, Lieut. J. D. HOBSON, Missoula.

To Fort Oglethorpe for instruction, Major W. C. RIDDELL, Helena.

To Jefferson Barracks, Mo., Lieut. J. J. FLYNN, Missoula.

Nebraska

To Berkeley, Calif., University of California, from Houston, Lieut. J. R. KLEYLA, Omaha.

To Camp Bowie, Texas, base hospital, for instruction, from Fort Oglethorpe, Capt. G. H. RATHBUN, Fremont.

To Camp Crane, Pa., from Fort Oglethorpe, Lieut. C. B. COE, Wakefield; from Hoboken, Major A. J. BROWN, Omaha.

To Camp Jackson, S. C., base hospital, for instruction, from Fort Oglethorpe, Major S. R. HOPKINS, Hastings.

To Camp Joseph E. Johnston, Fla., from Fort Oglethorpe, Capt. A. E. GADBOIS, Madison.

To Camp Meade, Md., evacuation hospital, from Watervliet, N. Y., Capt. J. BUIS, Pender.

To Fort Oglethorpe for instruction, Capt. T. J. JONES, St. Edwards.

To Fort Riley, as orthopedic surgeon, from Camp Travis, Lieut. L. K. STRATE, Hastings.

To New Haven, Conn., Yale Army Laboratory School, for instruction, from Atlanta, Capt. E. H. McLEAN, Omaha.

New Hampshire

To Camp McClellan, Ala., base hospital, from Fort Oglethorpe, Capt. C. F. NUTTER, Nashua.

New Jersey

To Camp Dix, N. J., Lieut. L. H. ROGERS, Trenton.

To Camp Greene, N. C., base hospital, for instruction, from Biltmore, N. C., Capt. N. K. BENTON, Newark.

To Camp Jackson, S. C., base hospital, Lieut. C. P. CLARK, Summit.

To Camp Meade, Md., base hospital, for instruction, Lieut. A. KROLL, Jr., Passaic.

To Fort Des Moines, Iowa, base hospital, for instruction, from Fort Oglethorpe, Capt. C. B. LUFBURROW, Plainfield.

To Fort Oglethorpe for instruction, Lieut. N. P. LOBSENZ, Passaic.

To New Haven, Conn., Lieut. J. F. A. RUBACKY, Passaic.

To New York, Bellevue Hospital, for instruction, from Fort Oglethorpe, Capt. N. W. CURRIE, Plainfield.

To Picatinny, N. J., Lieut. R. B. JARRATT, Penna Grove.

To Rockefeller Institute for instruction in the treatment of infected wounds, Lieuts. M. KUMMEL, Harrison; J. N. PANNULLO, Newark; E. H. SEIFERT, Paterson.

To Urbana, Ill., from Mount Clemens, Lieut. S. Z. ORGEL, Hackensack.

To Washington, D. C., Army War College, for instruction, and on completion *to Camp Devens, Mass.*, from Camp Dix, Lieut.-Col. W. H. HUTCHINGS.

New York

To Camp A. A. Humphreys, Va., to examine the command for nervous and mental diseases, from Fort Oglethorpe, Capt. J. C. FISK, New York.

To Camp Abraham Eustis, Va., camp hospital, for instruction, from Fort Oglethorpe, Lieut. H. S. MARCLEY, New York.

To Camp Crane, Pa., from Camp Wheeler, Capt. H. B. PRITCHARD, Syracuse; Lieut. F. C. KELLER, New York. From Fort Oglethorpe, Lieut. J. M. BERNHARD, New York; from Rockefeller Institute, Lieut. D. S. DOOMAN, Buffalo; from Washington, Lieut. P. W. DeGARMO, Kingston. Mobile hospital, from Camp Joseph E. Johnston, Lieut. A. A. J. JOHNSON, Brooklyn; from Fort McHenry, Lieut. B. W. McCUEN, Syracuse; to Fort Oglethorpe, Lieut. W. F. HUME, New York.

To Camp Devens, Mass., from Army Medical School, Lieuts H. B. SWAN, Chestertown; J. L. HEMSTEAD, Waterford; as orthopedic surgeon, and on completion *to Boston, Mass.*, Harvard Graduate School of Medicine, for instruction, from Fort Oglethorpe, Lieut H. S. REYNOLDS, Schenectady. Base hospital, from Boston, Lieut. C. K. DEMING, New York. Base hospital, for instruction, Lieuts. J. J. FINIGAN, Buffalo; A. B. ALLEN, New York; T. F. JUDGE, Troy.

To Camp Dick, Texas, from Love Field, Dallas, Lieut. D. D. STOWELL, New York.

To Camp Dix, N. J., from Army Medical School, Lieuts. M. B. BENDER, L. F. SANMANN, New York; R. E. ELLIOTT, Rochester, from Fort Oglethorpe, Lieut. G. FLAMM, New York.

To Camp Dodge, Iowa, to examine the command for nervous and mental diseases, from Fort Benjamin Harrison, Capt. B. R. NAIRN, Buffalo.

To Camp Gordon, Ga., base hospital, from Camp Wheeler, Lieut. P. F. PURCELL, Schenectady.

To Camp Greene, N. C., base hospital, from Biltmore, N. C., Lieut. R. C. SCHLEUSSNER, New York. Base hospital, for instruction, from Fort Oglethorpe, Lieut. I. W. KAHN, New York. Evacuation hospital, from Fort Oglethorpe, Lieut. J. KAUFMAN, New York.

To C[illegible] se hospital, from Camp Jackson, Capt. E. N. [illegible]

To C[illegible] m Army Medical School, Lieut. B. J. SLATER, Rochester.

To Camp Jackson, S. C., from Army Medical School, Lieut. G. P. McNEILL, Jr., New York; from Fort McHenry, Lieut. B. ROSENTHAL, New York. Base hospital, for instruction, from Fort Oglethorpe, Capt. I. M. HOLLY, Brooklyn.

To Fort Oglethorpe, base hospital, from Camp McClellan, Lieut. R. PEMBERTON, New York; from Camp Wadsworth, Lieut. R. B. ERNEST, Jr., New York; from Houston, Lieut. A. VALENSI, New York. For instruction, Capt. C. H. HOWELL, New York; Lieuts. H. AGRIS, H. SHARLIT, Brooklyn; T. J. O'RIORDAN, J. RESNIK, New York; A. WINKELSTEIN, Syracuse; from Camp Greene, Lieut. H. T. CARTWRIGHT, New York.

To Fort Slocum, N. Y., and on completion *to Washington, D. C.*, from Syracuse, Lieut. F. N. POTTS, Buffalo.

To Hot Springs, N. C., for instruction, Lieut. L. J. DeRUSSO, Albany.

To Jefferson Barracks, Mo., from Syracuse, Capt. E. W. BROWN, Mount Kisco.

To Lakewood, N. J., Lieut. H. T. HYMAN, New York.

To Lonoke, Ark., Eberts Field, as flight surgeon, from San Antonio, Capt. D. H. WEBSTER, New Rochelle.

To Morrison, Va., from Fort Oglethorpe, Lieut. T. P. GOLDSTEIN, New York.

To New Haven, Conn., from Army Medical School, Lieut. W. G. HAYWARD, Jamestown; from Camp Gordon, Lieut. I. E. LISS, New York. Yale Army Laboratory School, from Army Medical School, Lieuts. G. P. McNEILL, Jr., M. M. NEMSER, New York. Yale Army Laboratory School, for instruction, Lieuts. E. KELLERT, Albany; W. E. ZIELENSKI, Buffalo; F. C. McCLELLAN, Canandaigua; from Atlanta, Capt. M. C. FIELD, Brooklyn; from Camp Gordon, Major H. I. VAN WINKLE, Albany; from Canal Zone, Major O. TEAGUE, Staten Island; from Fort Oglethorpe, Majors B. F. KNAUSE, Brooklyn; J. S. BILLINGS, New York; from Rockefeller Institute, Lieuts. D. JUNG, Buffalo; C. H. HOCHMAN, New York.

To Newport News, Va., from Syracuse, Lieut. H. F. GOCKLEY, New York.

To New York, Neurological Institute, for instruction, Lieut. B. DIAMOND, New York.

To Princeton, N. J., Princeton University, from South San Antonio, Lieut. P. B. JENKINS, New York.

To report to the commanding general, Eastern Department, Lieut. S. W. THOMPSON, Oswego.

To Rockefeller Institute for instruction in the treatment of infected wounds, Lieuts. P. T. HARPER, Albany; J. T. FOWKES, Lafargeville; H. COWAN, New York; J. G. MORRESSEY, Yonkers.

To San Diego, Calif., Rockwell Field, from Mineola, Lieut. P. F. BERNSTEIN, Brooklyn.

To Urbana, Ill., from Mt. Clemens, Lieut. J. P. FITZGERALD, New York.

To Washington, D. C., from Fort Oglethorpe, Capt. M. B. PALMER, Rochester. Army War College, for instruction, and on completion *to Army Medical School*, from Fort Ontario, Lieut.-Col. G. H. SCOTT. For conference and on completion *to Belleville, Ill.*, Scott Field, as flight surgeon, from Mineola, Capt. W. A. SCRUTON, New York. Surgeon-General's Office, from Fort Oglethorpe, Capt. C. BREWER, New York.

The following orders have been revoked: *To Camp Cody, N. M.*, from Fort Riley, Lieut. L. M. VINCENT, New York; *to Camp Crane, Pa.*, from Camp Sheridan, Lieut. B. WILSON, New York.

North Carolina

To Camp Bowie, Texas, base hospital, for instruction, from Fort Oglethorpe, Capt. A. F. REEVES, Asheville.

To Camp Crane, Pa., mobile hospital, from Fort Oglethorpe, Lieut. H. R. LIPSCOMB, Greensboro.

To Camp Sevier, S. C., base hospital, from Fort Oglethorpe, Lieut. H. B. CONRAD, Winston-Salem.

To Camp Wadsworth, S. C., evacuation hospital, from Fort Oglethorpe, Capt. C. E. WOODING, Winston-Salem.

To Fort McHenry, Md., for instruction, Lieut. G. B. ROBERSON, Greensboro.

To Newport News, Va., Lieut. R. A. BAGLEY, Mayock.

North Dakota

To New York, Bellevue Hospital, for instruction, from Fort Oglethorpe, Lieut. J. B. TYRRELL, Underwood.

Ohio

To Camp Wheeler, Ga., base hospital, for instruction, from Fort Oglethorpe, Lieut. F. W. DIXON, Youngstown.

To Dayton, Ohio, Acceptance Park, from Fairfield, Ohio, Capt. P. A. DAVIS, Akron.

To Detroit, Mich., from Fort Oglethorpe, Lieut. E. C. YINGLING, Beaverdam.

To Fort Des Moines, Iowa, base hospital, for instruction, from Fort Oglethorpe, Capt. E. A. MURBACH, Archbold.

To Fort Monroe, Va., from Plattsburg Barracks, Capt. A. P. COLE, Cincinnati.

To Fort Oglethorpe, Capt. L. A. BREWER, Toledo. For instruction, Major C. A. L. REED, Cincinnati; Capt. R. M. MANLEY, Cleveland; Lieut. W. W. BECK, Toledo.

[illegible] base hospital, from Camp Upton, Lieut. M. E. [illegible]

[illegible] *C.*, from Fort Oglethorpe, Lieut. J. F. BEERMAN, Toledo.

To Ithaca, N. Y., Cornell University, from Everman, Texas, Lieut. F. W. THOMAS, Piqua.

To Lakewood, N. J., for instruction, Lieut. J. A. GARVIN, Cleveland Heights.

To New York, Bellevue Hospital, for instruction, and on completion *to his proper station*, from Fisherman's Island, Va., Lieut. N. C. MAYER, Cleveland.

To Richmond, Va., Lieut. F. G. KREFT, Toledo.

To West Point, Ky., from Camp Zachary Taylor, Capt. H. J. WARE, Cincinnati.

Oklahoma

To Camp Crane, Pa., mobile hospital, from Fort Sam Houston, Capt. M. E. STOUT, Oklahoma.

To Camp Lee, Va., base hospital, for instruction, from Fort Oglethorpe, Capt. M. ROGERS, Clinton.

To Camp Meade, Md., evacuation hospital, from Fort Oglethorpe, Capt. J. H. WHITE, Muskogee.

To Camp Shelby, Miss., evacuation hospital, from Fort Worth, Lieut. D. E. LITTLE, Eufaula.

To Columbus, Ga., from Fort Sill, Major C. M. O'CONNOR, Jr.

To Fort Bliss, Texas, base hospital, from Fort Sam Houston, Capt. F. B. SORGATZ, Oklahoma.

To Fort Oglethorpe, base hospital, from New Haven, Capt. J. E. HUGHES, Shawnee.

To Fort Snelling, Minn., base hospital, from Camp Bowie, Lieut. A. R. BUNGARDT, Cordell.

To New York, Bellevue Hospital, for instruction, from Fort Oglethorpe, Lieut. R. I. ALLEN, Nowata.

Oregon

To Camp Crane, Pa., from New Haven, Capt. J. H. THOMPSON, Enterprise.

To Camp Dick, Texas, from Dallas, Capt. H. L. UNDERWOOD, Le Grande.

To Camp Lewis, Wash., from duty as a contract surgeon, Major R. C. MATSON, Portland.

To Camp Sheridan, Ala., from Camp Forrest, Lieut. W. R. TAYLOR, Milwaukee.

Pennsylvania

To Arcadia, Fla., Dorr Field, as flight surgeon, from Mineola, Capt. E. E. CAMPBELL, Butler.

To Azalea, N. C., from New Haven, Lieut. H. W. KINDERMAN, Philadelphia; from Waynesville, N. C., Capt. N. R. GRAHAM, Sharpsburg.

To Berkeley, Calif., University of California, from Houston, Lieut. R. T. M. DONNELLY, Philadelphia.

To Buffalo, N. Y., Capt. M. H. BAKER, Pittsburgh.

To Camp Bowie, Texas, base hospital, for instruction, from Fort Oglethorpe, Lieut. E. M. ELLSWORTH, Wilkes-Barre.

To Camp Crane, Pa., from Camp Abraham Eustis, Capt. J. H. ARNETT, Philadelphia; from Camp Holabird, Lieut. B. FULTON, Pittsburgh; from Fort Oglethorpe, Capt. W. H. GLYNN, Pittsburgh; Lieuts. E. G. HENRY, Oil City; A. M. SHARPE, Philadelphia; from Rockefeller Institute, Lieuts. G. A. DAPP, Harrisburg; O. R. ETTER, Philadelphia; N. D. GANNON, Pittsburgh. Mobile hospital, from Fort Oglethorpe, Lieut. R. J. HAUSER, Danville; from Williams- bridge, Lieut. L. W. FREDERICK, Philadelphia.

To Camp Custer, Mich., from Army Medical School, Lieut. J. A. LOGAN, Pittsburgh. Base hospital, from Army Medical School, Capt. W. F. ROSS, Aspinwall; from Camp Sherman, Lieut. E. H. McCLIS- TER, Kittanning; from Fort McHenry, Capt. S. C. BOWERS, New Freedom.

To Camp Devens, Mass., from Army Medical School, Lieuts. P. L. COOK, J. M. WELCH, Philadelphia. As orthopedic surgeon, and on completion *to Boston, Mass.,* Harvard Graduate School of Medicine, from Fort Oglethorpe, Lieut. J. A. LAFFERTY, McKees Rock. Base hospital, from Camp Dodge, Capt. C. S. CALDWELL, Swissvale.

To Camp Dick, Texas, from Champaign, Ill., Capt. W. S. SHIMER, Philadelphia; from Dallas, Lieut. G. S. CUNNINGHAM, Pittsburgh.

To Camp Zachary Taylor, Ky., base hospital, for instruction, from Fort Oglethorpe, Lieut. P. T. HOPE, Mercer.

To [illegible] instruction, from Camp Sevier, Lieut. M. F. SULL[illegible]

To Fort Sam Houston, Texas, base hospital, for instruction, from Fort Oglethorpe, Lieut. P. L. BRUNER, Oil City.

To Fort Snelling, Minn., base hospital, from Camp Dodge, Lieut. J. P. MAUS, Philadelphia.

To Hoboken, N. J., from Camp Upton, Lieut. F. D. LEVY, Philadelphia. Base hospital, from Camp Wheeler, Lieut. E. G. HAWMAN, Reading.

To Hot Springs, N. C., from Fort Oglethorpe, Capt. J. C. BOGG, Pittsburgh.

To Lake Charles, La., Gerstner Field, from Mineola, Lieut. W. C. SMITH, Woodbine.

To Madison Barracks, N. Y., from Fort Oglethorpe, Major J. W. BAUMAN, Lansdale.

To Markleton, Pa., from New Haven, Capt. J. WALSH, Philadelphia.

To New Haven, Conn., Lieut. L. G. FLANNERY, Philadelphia. Yale Army Laboratory School, from Army Medical School, Capt. C. H. MANLOVE, Jr., Altoona; Lieut. J. N. HAYES, Crafton.

To Newport News, Va., from Fort Oglethorpe, Lieut. A. F. BECK, Philadelphia.

To New York, Bellevue hospital, for instruction, from Fort Oglethorpe, Capt. T. A. STEELE, McKeesport.

To Philadelphia, Pa., Jefferson Medical College, from the Surgeon-General's Office, Lieut.-Col. J. T. RUGH, Philadelphia.

To Rockefeller Institute for instruction in the treatment of infected wounds, Capt. H. C. UPDEGRAFF, Pittsburgh.

To Syracuse, N. Y., Lieut. J. N. CAMP, Foxburg.

To Washington, D. C., for conference, and on completion *to Fort Sill, Okla.,* Post Field, as flight surgeon, from Mineola, Capt. J. H. McKEE, Philadelphia.

The following order has been revoked: *To Camp Crane, Pa.,* from Camp Pike, Lieut. G. D. SCHOONMAKER, Philadelphia.

Porto Rico

To Mineola, N. Y., Hazelhurst Field, for instruction, from San Diego, Major E. I. VAUGHN, Central Aguirre.

Rhode Island

To Camp Sheridan, Ala., from Camp Forrest, Lieut. F. H. BECKETT, Providence.

To Princeton, N. J., Princeton University, from South San Antonio, Capt. A. W. STEVENSON, Newport.

South Carolina

To Camp Crane, Pa., from Camp Wheeler, Lieut. R. H. LONG, Carlisle.

To Camp Devens, Mass., from Camp Forrest, Lieut. W. O. WRIGHTSON, Spartanburg.

To Camp Lee, Va., base hospital, for instruction, Lieut. C. RIGBY, Spartanburg.

To Camp Wadsworth, S. C., Capt. T. J. PEAKE, Clinton. Base hospital, for instruction, Lieut. R. CATHCART, Charleston.

To Fort Riley, base hospital, for instruction, from Fort Oglethorpe, Lieut. H. DEAS, Charleston.

To Hoboken, N. J., base hospital, from Camp Hancock, Capt. A. P. McELROY, Union.

South Dakota

To Camp Dix, N. J., base hospital, for instruction, from Fort Oglethorpe, Capt. J. G. CHICHESTER, Redfield.

To Camp Gordon, Ga., base hospital, for instruction, from Fort Oglethorpe, Capt. J. F. McKIE, Wessington.

To Hampton, Va., Langley Field, from Lee Hall, Lieut. H. D. NEWBY, Parker.

Tennessee

To Camp Crane, Pa., base hospital, from Walter Reed General Hospital, Lieut. J. W. RAGSDALE, Memphis.

To Camp Dix, N. J., from Fort Oglethorpe, Capt. J. F. ADAMS, Bradyville. Base hospital, for instruction, from Fort Oglethorpe, Lieut. S. MEEKER, Memphis.

To Camp Zachary Taylor, Ky., base hospital, for instruction, Lieut. N. H. COPENHAVER, Bristol.

To Fort McDowell, Calif., from Camp Fremont, Capt. W. A. CASHION, Fayetteville.

To Mineola, N. Y., Hazelhurst Field, from Fort Omaha, Capt. G. E. CAMPBELL, Elizabethton.

To Washington, D. C., Surgeon-General's Office, from Everman, Texas, Capt. L. LEVY, Memphis.

Texas

To Camp Pike, Ark., base hospital, Lieut. P. E. LUECKE, Galveston; from Fort Benjamin Harrison, Capt. T. T. JACKSON, San Antonio; from Fort Oglethorpe, Lieut. W. C. TENERY, Waxahachie.

To Camp Sevier, S. C., base hospital, from Camp Logan, Lieut. J. L. MITCHELL, San Antonio.

To Camp Sheridan, Ala., base hospital, for instruction, from Fort Oglethorpe, Capt. A. M. McELHANNON, Sherman.

To Camp Sherman, Ohio, base hospital, from Camp Fremont, Lieut. T. J. CAGLE, Crosbyton.

To Camp Travis, Texas, Lieut. E. W. CLAWATER, Tyler. Base hospital, Lieut. A. E. GREER, Houston. Base hospital, for instruction, Capt. M. B. STOKES, Houston; from Fort Oglethorpe, Capts. J. M. F. GILL, Austin; T. D. FRIZZELL, Quanah.

To Camp Zachary Taylor, Ky., from Army Medical School, Lieut. E. J. STEVES, San Antonio.

To College Station, Texas, from Camp Travis, Capt. O. EHLINGER, College Station.

To Fort Oglethorpe for instruction, Major J. E. THOMPSON, Galveston. Capt. J. W. SCOTT, Houston.

To Fort Riley for instruction, Lieuts. F. B. HART, Kountze; R. S. K. WOOD, Waco.

To Fort Sam Houston, Texas, from Fort Bliss, Major S. M. CORBETT.

To New York, Bellevue Hospital, for instruction, from Fort Oglethorpe, Lieuts. E. D. RICE, Tyler; H. E. HOKE, Waco.

Utah

To San Francisco, Calif., Letterman General Hospital, from Talmadge, Calif., Lieut. F. J. CURTIS, Salt Lake City.

Vermont

To Camp Crane, Pa., from Fort Oglethorpe, Capt. T. S. BROWN, Burlington.

To Camp Shelby, Miss., base hospital, for instruction, from Fort Oglethorpe, Capt. J. P. GIFFORD, Randolph.

To New York, Bellevue Hospital, for instruction, and on completion *to Camp Meade, Md.,* base hospital, from Camp Crane, Lieut. J. P. TIERNEY, St. Johnsburg.

Virginia

To Camp Travis, Texas, as orthopedic surgeon, from Camp Pike, Lieut. W. I. LAUGHON, Bedford.

To Lakewood, N. J., for instruction, from Camp Lee, Lieut. L. E. STUBBS, Gloucester.

To New Haven, Conn., Lieut. W. C. HARMAN, Dolphin.

To Raleigh, N. C., Lieut. A. F. BAGBY, St. Petersburg.

To Richmond, Va., Union University, Lieut. H. L. HARRIS, Jr., Richmond.

To Rockefeller Institute for instruction, Lieut. H. W. BLANTON, Richmond.

Washington

To Camp Crane, Pa., mobile hospital, from Fort Oglethorpe, Lieut. L. S. DEWEY, Okanogan.

To Mineola, N. Y., Hazelhurst Field, for instruction, from Rockwell, San Diego, Capt. G. W. BEFLER, Seattle.

The following order has been revoked: *To Camp Lewis, Wash.,* base hospital, Lieut. C. S. PASCOE, Tacoma.

West Virginia

To Camp Greene, N. C., base hospital, Lieut. W. E. MYLES, White Sulphur Springs. Base hospital, for instruction, Major H. D. HATFIELD, Huntington.

To Camp McClellan, Ala., base hospital, for instruction, from Fort Oglethorpe, Capt. E. B. WRIGHT, Richwood.

To Camp Travis, Texas, base hospital, for instruction, from Fort Oglethorpe, Lieut. O. H. GRIFFITH, Parkersburg.

To Fort Oglethorpe for instruction, Lieut. C. G. MORGAN, Moundsville.

To Fort Thomas, Ky., from Camp Meade, Lieut. V. L. GLOVER, Inwood.

Wisconsin

To Camp Gordon, Ga., base hospital, from Army Medical School, Capt. F. A. McJUNKIN, Milwaukee.

To Camp Grant, Ill., base hospital, for instruction, Lieut. J. M. ARNSON, Eau Claire.

To Camp McClellan, Ala., to examine the troops for cardiovascular diseases, from Fort Oglethorpe, Lieut. E. I. MOQUIN, Fairwater.

To Camp Sevier, S. C., base hospital, for instruction, from Fort Oglethorpe, Capt. H. A. ROBINSON, Kenosha.

To Fort Leavenworth, Kan., Lieut. F. C. CHRISTENSEN, Racine.

To New York, Bellevue Hospital, for instruction, from Fort Oglethorpe, Lieut. W. G. DARLING, Milwaukee.

Wyoming

To Camp Crane, Pa., base hospital, from Rockefeller Institute, Lieut. J. F. O'DONNELL, Casper.

Medical News

(Physicians will confer a favor by sending for this department items of news of more or less general interest; such as relate to society activities, new hospitals, education, public health, etc.)

ALABAMA

Personal.—Dr. Lee W. Roe has been elected medical inspector of the schools of Mobile, to succeed Dr. M. Toulmin Gaines, who has resigned to enter the military service.

Home for Antituberculosis Dispensary.—The Birmingham Anti-Tuberculosis Association at its annual meeting announced that it had purchased a permanent home to house a dispensary. The association adopted resolutions of regret on the death of Lieut. Philip M. Kyser, M. C., U. S. Army, and elected officers. Dr. George Eaves was made secretary of the association; Dr. Horace M. Edmonds, Tonawanda, N. Y., a member of the board of trustees, and Dr. Morris Newfield, a member of the executive committee.

CALIFORNIA

Venereal Disease Reports.—For the first six months of 1918 nearly 2,000 cases of gonorrhea were reported to the state board of health under the new venereal disease regulations, and during the same time about 1,500 cases of syphilis. This represents a great improvement in the reporting of these diseases, and it is expected that for the whole year the number of these cases reported will be greater than the number of tuberculosis cases.

Shipyard Sanitation.—California now has an increased number of shipyards and work is being carried on actively. According to the *Bulletin* of the state board of health, sanitary conditions in the neighborhood of some of these shipyards have been bad. A shipyard was built in a marshy district overflowed by tides and consequently a breeding-place for mosquitoes. Mosquitoes were so numerous that they interfered greatly with the work in the shipyard and even compelled the suspension of work at times. This applied also to some of the other shipyards in the state, and it became so serious that the governor was appealed to for aid. He referred the matter to the state board of health, and after investigation, drainage was instituted where possible and standing water covered with oil. At Long Beach this work was done by the local authorities with assistance from Los Angeles, the National Canners' Association and other corporations. The mosquito nuisance has now been abated.

DISTRICT OF COLUMBIA

Railway Surgeons to Meet.—The twelfth annual meeting of the Minneapolis, St. Paul, and Sault Ste. Marie Railway Surgical Association will be held at Hotel Radison, Minneapolis, December 3 and 4.

Personal.—Commander Howard F. Strine, M. C., U. S. Navy, has been appointed associate professor of the principles and practice of medicine in Georgetown University, Medical School, and acting chief of the department of surgery, at the University Hospital, Washington, D. C.

IOWA

Denied New Trial.—Dr. C. Allen Snyder, Dubuque, convicted of murder in the second degree and sentenced to twenty years in the penitentiary, is reported to have been denied a new trial.

Guilty of Disloyalty.—Dr. Walter A. Matthey, charged with bringing Daniel H. Wallace to Davenport to a seditious meeting, July, 1917, is said to have been found guilty on one of two counts. Sentence has not yet been pronounced.

Personal.—Dr. David K. Douthett, Osceola, fractured his right arm while cranking his automobile, October 2.——Dr. E. T. McLaughlin, Knoxville, has started for France where he goes as secretary to the Knights of Columbus.——Dr. William C. Goenne has been appointed city physician of Davenport during the absence of Dr. George M. Middleton, in the military service.——Dr. Max E. Witte has been reappointed superintendent of the Clarinda State Hospital.

MARYLAND

Public Health Service to Aid in "Flu" Epidemic.—The state department of health has announced that the United States Public Health Service will send to Maryland four or five doctors to help out in the counties where many of the local physicians are either ill or overworked because of the influenza epidemic.

The most encouraging feature of the situation which has been alarming public health officers for more than a week was the announcement that the disease appeared to be abating somewhat in the city and state, as well as at the military camps. Information received at the Baltimore City Health Department was that the disease seemed to be lessening its grip on South Baltimore. While the deaths in the city did not show any decrease, there was a slight drop in the number of new cases reported. Dr. C. Hampson Jones, chief of the state bureau of communicable diseases, stated that conditions were generally improved in the counties. Reports to this effect came from Cumberland, Hagerstown, Frederick, and Kent County.

Personal.—Dr. James J. Murphy, chief of staff of the Emergency Hospital, Annapolis, and county health officer for Anne Arundel County, is ill with pneumonia following an attack of influenza. His removal from active practice is a severe blow to the city, whose depleted supply of physicians are overworked in attending influenza cases.——Dr. James H. Mason Knox, Jr., has returned to Baltimore, after a year in France, where he helped organize the work of the Children's Bureau, a part of the Civilian Relief activities of the Red Cross. Dr. Knox paid two visits to the front, one in Belgium and the other to an American sector, during his stay in France.——Drs. William A. Fisher, William S. Baer and George Walker, all of Baltimore, who were attached to the Hopkins Unit, but since have been detached into other branches of the medical service in France, and Dr. Archibald C. Harrison of the University of Maryland unit have received the rank of lieutenant-colonel. Dr. Fisher is chief assistant to Dr. John M. T. Finney; Dr. Baer has been made chief consultant orthopedic surgeon of the American Expeditionary Forces, and Dr. Walker is doing social hygiene work at ports of debarkation of American soldiers.——The many friends of Prof. Thomas S. Cullen of the Johns Hopkins University will hear with regret the news of the recent death of Mrs. Cullen.

MINNESOTA

Health Association Incorporated.—The Minnesota Public Health Association announces in its weekly bulletin, October 3, that the association has been regularly incorporated in the state as an "educational, scientific and benevolent society, not for gain or profit." The incorporators are the present officers, who are Governor J. A. A. Burnquist, president; M. L. Burton, Dr. Warren L. Beebe, St. Cloud; Mrs. A. L. Robinson, Mrs. Mary Brandrup, Drs. Edward L. Tuohy, Duluth; Pearl M. Hall, Minneapolis; George D. Head, Minneapolis; Prof. F. H. Bass, Mrs. W. L. Laidlaw and A. D. Wilson. The annual meetings will be held in November.

MONTANA

State Tuberculosis Society Election.—At the annual meeting of the Montana State Association for the Prevention and Cure of Tuberculosis, September 25, the following officers were elected: president, H. R. Cunningham, Helena; vice presidents, Dr. Oscar M. Lanstrum, Helena, Mrs. S. Sadler, Great Falls, and Otto Simonson, Butte; honorary vice presidents, Governor S. B. Stewart, Harry Yeager, Great Falls, and Roy Alley, Butte; secretary, Mrs. Sarah Morse, Helena, and treasurer, Dr. T. O. Hammond, Helena. The principal addresses were those by Dr. David R. Lyman, New Haven, Conn., president of the National Tuberculosis Association, on "The Rehabilitation and Reconstruction of the Tuberculous Soldier," and by Dr. Charles J. Hatfield, Philadelphia, secretary of the National Tuberculosis Association, on "The Function of the Organized Tuberculosis Forces."

NEW JERSEY

Epidemic Abating.—According to the health board of Gloucester the epidemic is receding and a few days more will find most of the shipyard workers back at work. Seven additional deaths were reported, October 12, making a total of eighty-five. Sanitary squads are inspecting the homes in which cases have occurred and are volunteering their services to clean and disinfect. In Camden there has been a daily decrease in the number of new cases reported. Up to October 12, 5,163 cases had been reported.

NEW YORK

Public Health Nurses Appointed.—The following places have secured appropriations for public health nurses since April 15; Syracuse, Olean, Rensselaer, Dunkirk, Ogdensburg, Tuckahoe, Herkimer, Endicott, Gloversville, Kingston, Hudson, Norwich, Cohoes, Carthage, Greene, Ticonderoga and the Dutchess County Health Association.

New York City

New Naval Hospital in Brooklyn.—A naval hospital which will house 1,200 patients and a nurses' home for 250 nurses is in the process of construction on Flushing Avenue near Emerson Street, Brooklyn. The building is to be four stories high with a floor area of 280 by 200 feet. The cost of the building will be $950,000. The contract calls for the completion of the building within 120 calendar days.

Home for Overseas Nurses.—The New York County Chapter of the American Red Cross opened a temporary home for nurses passing through this city on their way to or from the front, at 11 West Tenth Street, with appropriate exercises on October 10. With more than 1,000 Red Cross nurses always quartered in this city this home will fill a great need in providing rest and recreation for transient nurses.

Outing for Convalescent Soldiers and Sailors.—Special Deputy Police Commissioner John A. Harriss, October 1, acted as host to 150 convalescent sailors from United States war ships on duty in foreign waters and 100 marines who are recovering from wounds received in the fighting around Chateau Thierry. The patients were conveyed by automobiles from various hospitals to Dr. Harriss' steam yacht which took them to his summer home at Collender's Point, Conn., where they were entertained with a concert and a shore dinner.

Influenza in New York.—The records of the health department show that, from September 18 to October 11, 25,082 cases of influenza have been reported with 394 cases of pneumonia. There have been 183 deaths from influenza and 210 from pneumonia during this period. The board of estimate has given the health department $55,000 with which to fight the epidemic. Health Commissioner Dr. Royal S. Copeland has taken the unusual method of calling on the district leaders to use their party machinery to hunt out influenza cases. A statement issued by the Public Health Committee of the New York Academy of Medicine asserts that more vigorous measures should be taken by the health department in its campaign against Spanish influenza, but declares that there is no occasion for undue alarm on the part of the public, as only 2 per cent. of the population has been affected thus far. The committee strongly endorses the educational campaign being carried on by the health authorities here and elsewhere, and predicts that the epidemic will begin to decline in from two weeks to a month. Precautionary measures are recommended, many of which the health department is already enforcing. The most serious phase of the situation is the shortage of nurses. It is said that 5,000 nurses are needed at once. To meet this demand a Nurses' Emergency Council has been formed through which the Red Cross is making a house to house canvass for women with nursing knowledge. Reports from the state board of health show that, October 10, there were 31,217 cases of influenza in the state. The state laboratory is preparing an anti-influenza serum which will be ready for distribution in a few days.

OKLAHOMA

Personal.—Dr. Albert C. Hirshfield, assistant city physician of Oklahoma City, is said to have resigned.——Dr. Nelson P. H. White, Clinton, was seriously injured when his automobile was struck by a train at a grade crossing, 3 miles east of Clinton.——At a recent meeting of the state medical board of Oklahoma City, Dr. B. L. Denison, Garvin, was elected president.

Tuberculosis Conference.—The annual meeting of the Oklahoma Association for the Prevention of Tuberculosis and the State Public Health Conference was held in the Chamber of Commerce, Oklahoma City, September 24. Two hundred delegates were present, and the following officers were elected: president, E. K. Gaylord, Oklahoma City (reelected), honorary vice president, Dr. John W. Duke, Guthrie (reelected); vice presidents, Drs. Lewis J. Moorman, Oklahoma City, Mr. John Moffitt, Muskogee, Mr. John Woodward, Tulsa, and Mr. John W. Sunder. It was voted to change the name of the association to the Oklahoma Tuberculosis Association.

PENNSYLVANIA

Epidemic in Schuylkill County.—According to a special telegram to the *Public Ledger* on October 12, there were 11,000 cases of influenza in Schuylkill County, of which 1,600 were in Pottsville. Many physicians from other localities, making a total of seventy, were getting the situation in hand. In addition fifty physicians have been ordered there from the U. S. Medical Corps at Allentown. In Minersville the epidemic raged among the foreign born population and a number of men from the United States Medical Corps were ordered to take charge there. Coal production in this place has been greatly curtailed.

Philadelphia

Governor Appeals for Nurses.—October 11, Governor Braumbaugh issued a proclamation calling on nurses to volunteer their services during the influenza epidemic, especially nurses engaged as companions in the homes of the wealthy.

Influenza Epidemic.—Lieutenant-Commander Plummer, surgeon in charge of the Fourth Naval District, in which the first cases of epidemic influenza appeared in this city, reported, October 11, that the district was practically cleared of the disease. There were but twenty-six cases of influenza and three of pneumonia, of these only sixteen were within the district, the other ten having been taken from arriving ships. A chart in the surgeon's office shows that the epidemic began in the district on September 12, the peak was reached September 18 and that there was a steady decline since that date. The death rate for the week ending October 12, in Philadelphia was the highest ever recorded—3,234, of which 2,635 were caused by influenza and pneumonia. The highest death rate of any previous week was 1,191 on October 5, when the death rate was 35.26 per thousand. The rate for the week just passed reached 95.74 per thousand. Five nurses have died from influenza at the Philadelphia General Hospital since October 8.

Personal.—Dr. Cyrus L. Stevens, Athens, the president elect of the Medical Society of the State of Pennsylvania, who was stricken with pneumonia during the convention of the Medical Society, in this city, is convalescing at the University Hospital.——Dr. Elmer G. Whinna has just completed twenty-five years of continuous service as physician-in-charge of the Philadelphia Home for Infants.——Drs. Isaac F. Stover, Philadelphia, and Louis Weinstock, New York, are recovering from pneumonia. Dr. Stover is outside physician of the Germantown almshouse.——Dr. James F. Carrell is recovering from influenza at the St. Joseph's Hospital.——Dr. Donald Guthrie, chief surgeon at the Packer Hospital, Sayre, Pa., is in the University Hospital suffering from pneumonia following influenza.——Dr. Harrington S. Dickinson has been appointed assistant school medical inspector.——Dr. James M. Anders, who has been ill with influenza, has recovered.——Dr. Eugene Swayne, Bristol, who mysteriously disappeared last week, returned to Bristol, October 11. He had been working among influenza patients for a number of days and had gone to Philadelphia for a conference, collapsed on the train and was taken to the Frankford Hospital, where he was unconscious for four days before his identity could be determined.

UTAH

New Officers.—At the twenty-fourth annual meeting of the Utah State Medical Association held in Salt Lake City, September 10 and 11, Dr. George W. Middleton, Salt Lake City, was elected president and Dr. William L. Rich, Salt Lake City, secretary.

Personal.—Dr. Harry N. Mayo, Salt Lake City, has resigned as a member of the state board of medical examiners to enter the military service.——Major Walter C. Chidester, M. C., U. S. Army, has been assigned to duty as chief of the surgical staff of the reconstruction hospital, Fort Douglas.

VERMONT

Personal.—Dr. John H. Woodruff, Barre, has been appointed medical aide to the governor of Vermont, to succeed Dr. John B. Wheeler, Burlington, who has resigned.——The Caledonia County Medical Society gave a farewell dinner at St. Johnsbury for Lieut. Robert H. Burke, who has been ordered to Camp Upton, and presented him with a wrist watch and a masonic ring.——Dr. Fremont Hamilton, Brattleboro, was seriously injured by the overturning of his automobile, August 31.——Dr. Chester M. Ferrin, Burlington, has been elected Surgeon-General of the Grand Army of the Republic.

WASHINGTON

Hospital at University.—A plan to build a hospital on the campus of the University of Washington, Seattle, to cost a million dollars and which is to form the nucleus for a medical department of the university, was proposed and endorsed at the meeting of the Kings County Medical Society.

Law Violators.—Dr. William G. Emonds, Seattle, is reported to have been found guilty, September 24, of issuing a prescription for liquor. He is said to have been convicted twice in 1916, and once in 1918, of unlawfully issuing prescriptions for liquor.——Dr. Thomas R. Loer, Seattle, is said to have been found guilty of unlawful issuance of prescriptions, September 6, and to have been fined $200.

WISCONSIN

State Society Meeting.—At the seventy-second annual meeting of the State Medical Society of Wisconsin, held in Milwaukee, October 2 to 4, the following officers were elected: president-elect, Dr. Dennis J. Hayes, Milwaukee; vice presidents, Drs. J. Sothoran Keech, Racine, Luther A. Potter, Superior, and Herman Gilbert, Madison; Councilor for the first district, Dr. Hoyt E. Dearholt, Milwaukee; member of the committee of public health and instruction to succeed Dr. John M. Beffel, Milwaukee, Dr. William H. Washburn; delegate of medical education, to succeed Dr. Louis M. Warfield, Dr. Louis F. Jermain, Milwaukee; delegates to the American Medical Association, Drs. Horace M. Brown, Milwaukee, and L. Rock Sleyster, Waupun; alternates, Dr. John F. Pember, Janesville, and Louis F. Jermain, Milwaukee, and acting councilor for the seventh district, during the absence of Dr. Edward Evans, in France, Dr. Wilbur T. Sarles, Sparta.

CANADA

Influenza.—The influenza has seized Montreal, Ottawa, Toronto, Hamilton, and other Canadian cities in a firm grip. Hotels are being turned into improvised hospitals in Toronto for the accommodation of patients, the hospitals being filled to overflowing. There is a great demand for nurses, not only among soldiers but among civilians. Many deaths have been reported, particularly from pneumonia.

GENERAL

Meeting of American Public Health Association.—At the request of the Surgeon-General of the U. S. Public Health Service, the Officers of the American Public Health Association announce the postponement of their annual meeting, which was to have been held in Chicago October 14-17, to December 9-12, at the same place. This action was deemed advisable especially because it was considered unwise to ask sanitarians to leave their posts under present health conditions.

Cancellation of Meeting of Clinical Congress of the American College of Surgeons.—Information has been received, under government frank, that "owing to the influenza epidemic prevalent throughout the country and the resultant increased demand for the services of doctors in their home communities, it has been considered advisable by the executive committee of the General Medical Board to cancel the meeting scheduled to be held in New York City at the Waldorf Astoria, October 20. The regular annual session of the Clinical Congress of the American College of Surgeons, arranged for the week beginning October 21, has been cancelled for the same reason."

FOREIGN

Austria Forbids the Export of Drugs to Hungary.—Austrian telegram advices from Vienna state that Austria has forbidden the exportation of pharmaceutical supplies to Hungary. The Hungarian government has, therefore, been compelled to confiscate all supplies that are found in pharmacies.

Personal.—Dr. Maurice F. Egan, formerly American minister to Denmark, had bestowed on him the grand cross of the Order of Dannebrog by King Christian.——Dr. William White, Pittsburgh, has been placed in charge of the Italian Tuberculosis Unit, recently organized by the American Red Cross.

Collective Inquiry on the By-Effects of Arsphenamin.—The *Hospitalstidende* quotes a German weekly to the effect that so many reports have been made on by-effects from arsphenamin that a Cologne medical society, the Allgemeine ärztliche Verein, has appointed a committee to collect data on the subject. The German Dermatologic Association is represented on the committee by Professor Hoffmann, and physicians in general are asked to report all instances of by-effects in their practice to the committee, Rudolfplatz 3, Köln.

Deaths in the Profession Abroad.—Dr. M. Jatta, of the Italian Public Health Service, in charge of the campaign against malaria in the province of Puglia.——Dr. F. Arena, professor of chemical analysis at the University of Naples.——Dr. F. Jeannel, dean and professor of surgery at the University of Toulouse, aged 68, author of numerous articles on surgery and of a manual on surgery of the intestines.——Dr. E. Fraenkel, a prominent Danish practitioner of the Slagelse province.——Dr. J. R. Semprun, professor of clinical neurology at the University of Buenos Aires, senator, consejero de la Facultad de Ciencias Medicas, director of the Asistencia Publica, and president of the Comision Nacional de Bellas Artes, in addition to his work as chief of the Hospital Muñiz and detention hospital.

"New and Nonofficial Remedies" in France.—The *Paris médical* now falls into line with some other French medical periodicals in describing for its readers the work and ideals of the Council on Pharmacy and Chemistry and the book "New and Nonofficial Remedies." It reproduces entire Professor Puckner's letter on the subject to the *Journal de pharmacie et de chimie* relating that he had followed with interest the recent discussion in the Académie de médecine relative to regulating the sale of proprietaries. A whole page in the *Paris médical* is devoted to a translation of the preface to N. N. R., and the fact is emphasized that of all the proprietaries indexed only five or six are of French origin while over half of them are of German production. A previous notice of the kind was summarized in The Journal, June 8, 1918, p. 1783.

In Honor of Cortezo.—The director of the *Siglo Medico*, Excmo. Señor Don Carlos Maria Cortezo, has been a prominent figure in medical and political circles in Spain for many years, and has occupied high posts in the state, minister of public instruction, senator, etc. As already mentioned in these columns, the highest center of national culture, the Academy of Language, recently elected him to membership, and his friends on this occasion have opened a subscription for the purpose of offering him, it is said, "a homage worthy of his name and high position." The treasurer of the fund is Dr. J. Sarabia, Velasquez 5, Madrid. The dean of the medical department of the University of Madrid, Professor Recasens, initiated the movement in appreciation of Cortezo's constant efforts to promote the moral and material welfare of the profession, and particularly for his plan for the support and education of the orphans of physicians, the new Colegio de Huerfanos at Madrid.

SOUTH AND CENTRAL AMERICA, MEXICO AND WEST INDIES

Fiftieth Professional Anniversary of Uribe.—On the initiative of the medical society of Medellin, Colombia, the profession throughout the whole country, Colombia, joined in doing honor to Dr. F. A. Uribe of Medellin on the occasion of his "golden wedding with science." He is a member, with three other physicians, of the senate of the republic. The lower house has about fourteen medical members.

Medical Society and Journal of Northern Brazil.—In 1899 the physicians of northern Brazil organized the Sociedade de Medicina e Pharmacia do Amazonas, and founded the *Revista Medica do Amazonas.* Neither the society nor its journal lasted more than a few months, but ten years later the *Amazonas Medico* was founded. This, too, survived only for ten issues. The medical organization was revived last year, and it has now started anew the publication of the *Amazonas Medico,* and both seem to be entering on an era of successful and fruitful work. The *Amazonas* starts on its second phase as a quarterly, under the editorial supervision of Drs. A. da Matta, J. de Moraes and four others. An appeal for exchanges is printed in seven languages: Address Caixa Postal 40 A, Manaos. The first issue is indexed in the Current Literature Department.

CORRECTION

Captain Morehouse Living.—The Journal last week carried the report of the death of Capt. Cecil Goodard Morehouse, Waukon, Iowa. We are informed that a cablegram received by Mrs. Morehouse states that Captain Morehouse was severely wounded on July 16, but recovered and is now at work again.

MEXICO LETTER

Mexico City, Sept. 23, 1918.

Popular Scientific Lectures

The alumni of the Escuela Medico Militar have organized a series of lectures on scientific subjects to be delivered by the professors of the school. They are held in the hall of the National Museum, and the three that have already been delivered have been very well attended. One was by Dr. E. Cervera, professor of bacteriology. His subject was "The Therapeutics of Yesterday and Today." Dr. E. Ramirez, professor of medical chemistry, spoke on the present status of medical science, and Sr. I. Ochoterena, professor of histology, on the relations between comparative neurology and human psychology.

Friends of France

A society has been organized among the leading intellectuals of the country. It is called the Amigos de Francia, and includes Dr. E. G. Martinez, physician and poet, who is president of the society, Dr. C. Barajas, author; Dr. J. Urueta, former minister of foreign affairs; Dr. L. M. Rojas, director of the daily paper, the *Universal;* Dr. F. Canale; D. C. D. Dufoo, economist; Dr. M. Flores and E. Pallares, journalists; Dr. A. Pruneda, director of the Escuela Nacional de Comercio, Lic. J. S. Azcona, and a number of others.

The Blind

A committee of which Dr. J. Terres is president has been organized to prevent the spread of blindness and to ameliorate the condition of the blind. It has inaugurated its work by publishing articles in the daily papers to enlighten the public on the dangers of smallpox as a frequent cause of blindness, and the necessity for warding it off by vaccination and revaccination. The importance of using exclusively animal vaccine for the purpose has been emphasized, as this eliminates the possibility of inoculation with syphilis by this means (since unfortunately even yet some physicians employ humanized vaccine). Instructions were also given how vaccination should be done correctly. The committee announced further that it will present tubes of vaccine lymph to all who apply.

The Homeopaths Appeal

The governor of the state of Puebla has issued a decree prohibiting the practice of medicine to the homeopaths in that state, as there they are generally very ignorant persons. They appealed to the district judge, alleging that the governor's order violated their constitutional rights. The judge denied their appeal, and they have carried their appeal to the supreme court of the nation. This high tribunal has not yet handed down its decision in the matter.

Quadruplets

The wife of a citizen of Merida, in Yucatan, was recently delivered of four children at one birth, three boys and one girl. Mother and children are in the best of health, according to the local papers.

Quarantine Against Guatemala

The Departamento de Salubridad has been officially informed that yellow fever has disappeared from the state of Guatemala, where there have been cases during the last months. An official survey is to be made at once to verify this notice so that the quarantine between Guatemala and Mexico can be suspended, as it materially hampers commerce between the neighbor countries.

Bazaar for Hospital

A *kermesse* was organized, September 15, for the benefit of the American Hospital. It was held in the halls of the Eliseo, founded by the United States colony, in this city. It was crowded with citizens and subjects of the Allied nations and leading members of Mexican society, and a large amount was collected for the improvements needed at the hospital.

Influenza

About 50 per cent. of the sailors on the Argentine man of war at present in Vera Cruz waters, and those that had come to this city for a visit have been affected with influenza, but fortunately it has been mild to date. It is remarkable that among the inhabitants of the city influenza has not assumed an epidemic character. The epidemic among our Argentine guests is ascribed to the influence of the altitude of the city and the relative drop in temperature noted at this time of the year. The sailors affected were isolated and properly cared for

PARIS LETTER

Paris, Sept. 26, 1918.

Antidysentery Measures

A number of cases of dysentery, several of which terminated in death, have occurred in Paris, and in the *département* of the Seine. In order to avoid a spread of the disease, the prefect of police has asked the people to conform strictly to certain regulations, such as, to use only milk that has been boiled for at least five minutes; not to put ice in any drinks; to protect food from flies, which should be destroyed in every possible way.

Biology of War

The Société de biologie has arranged to hold a series of meetings devoted to discussion of the biology of war. These meetings will be held monthly. The first meeting will take place October 19 and will be given over to the discussion of shock and anesthesia during shock. At the second meeting will be considered infection in the army, and antiseptics at the third.

Brazilian Medical Mission

An important Brazilian medical mission has arrived in Paris. It consists of 180 persons and is in charge of Dr. Nabuco de Gouvea, deputy. The physicians composing the mission will go to the various French hospitals where they will remain until the Brazilian hospital of 500 beds has been completed in the war zone. Dr. de Gouvea has under his direction eight general *chefs de service,* sixteen *chefs d'infirmeries* or *laboratories,* and forty-one *auxiliaires* for the surgical service proper. The pharmacy staff consists of a *chef de service* with two assistants and three *auxiliaires.* There is also a *service d'intendance,* or clerical force. A corps of nurses and a section of the navy sanitary (medical) corps accompany the mission.

Workshop for Franco-American Wounded Soldiers

In Paris there is an *atelier du blessé franco-américain* (at the Grand Palais) where wounded soldiers and the invalided, as well as men on furlough may find employment that is both remunerative and suitable for them. The government, appreciating the work done since the beginning of the war, by Madam Nicolas Eliasco, who is in charge of *l'Atelier du blessé franco-américain,* has conferred on her the medal of the "Reconnaissance française."

A New French Red Cross Stamp

The postal department has on sale a new French Red Cross stamp. On one side of this stamp is the picture of a nurse against a background of ruins, from which unfortunate refugees are being taken by an automobile ambulance. On the other side is a small boat carrying to the hospital ship wounded and sick soldiers who are being brought back from the Orient.

LONDON LETTER

London, Sept. 10, 1918.

A State Medical Service

In recent years much socialistic legislation has taken place, particularly in regard to matters of health. The outstanding instance, for example, is, of course, the insurance act. As pointed out in previous letters, this act is certain to be developed in many directions. Its defects, such as the failure to provide for specialist advice or hospital treatment, are indisputable. About three fourths of physicians are on its panels and therefore are part-time state officials. The burning question now is whether whole-time physicians should be employed. Advanced social reformers are strongly in favor of this proposal, but it is not acceptable to any except a small socialistic minority of the medical profession. The great changes brought about by the war are being used as an argument in favor of the proposal. It is said that our vast armies are well cared for by a state medical service and that when the physicians return to civil practice they will have been admirably trained for a similar service. Moreover, many who in consequence of their patriotism have sacrificed their practices will thus be provided for. Though not officially announced, there is reason to think that a scheme for a whole-time medical service has already been drawn up whereby there are to be five classes corresponding with army ranks: Class 5, lieutenant; Class 4, captain; Class 3, major; Class 2, lieutenant-colonel, and Class 1, colonel. The commencing pay for the fifth class, equal to the lieutenant, is $2,000 a year, with promotion to the fourth class at $2,500, third class at $3,750, second class at $5,000 and first class, equal to the full rank of colonel, $7,500 a year. The second and first classes will remain at these amounts, but for the lower classes there will be yearly increments, for the fifth class of $75 a year until a maximum of $2,500 is reached, and for the fourth class a rise of $125 a year until the third, or major's, class, when the annual increase will be $250 a year, till $5,000 is reached. A novel feature of the scheme is that promotion can be obtained from one class into another only by examination. Thus, unless he passes an examination, the fifth class man will never get above his $2,500 a year. There must be four years interval between the fifth and fourth classes and eight years between both the fourth and third, and the third and second, from which will be chosen the highest class at $7,500 a year. There will be no necessity for a vacancy to exist before a man can qualify for a higher class and pay, at any rate up to the third or major class. The higher classes will deal chiefly with administrative work and with the giving of consultative advice. There will be no expenses to be paid out of the physician's salary; everything—drugs, appliances, clinics and traveling expenses—will be paid for by the government. Men will be expected to look after the health of between 2,000 and 3,000 persons. It will not be necessary to live in the big houses at present in vogue. Any sized house and in any adjacent locality will do, as long as it has telephonic communication. On the argument that either a patient is fit for work or unfit so he will be expected to attend at the office in the morning, evening consultations will be discontinued, and fewer visits paid than is the case at present. Work out of hours, that is to say, after 5 o'clock, will be taken by the juniors, who will take duty in rotation. Localities will be mapped out with exact boundaries, and in those areas all residents, whether rich or poor, will be entitled to medical benefit. All hospitals will be taken over by the government. There will probably be no compensation for the capital value of practices except in cases of unusual hardship; but those entering the scheme will have at 60 pensions, equal to two thirds of their salary, though perhaps they may go on practicing after that date. As a beginning, men who have been in practice for many years and are otherwise qualified will be enabled to enter the service at a higher class than the lowest. Full consultant and specialist services will be provided; men will be appointed to them after taking a special course and passing an examination in the particular work. They will receive higher pay. Study leave up to six months will be granted. Holiday leave will be the same as in the civil services—a month each year. All local lay control will be done away with, the service being under a central board of commissioners consisting of: (1) members appointed by the government from outside the medical profession; (2) members appointed by the government from men at the head of the medical profession, and (3) members elected by those medical men serving in the scheme.

One organized body of physicians, the Medico-Political Union, which principally consists of panel physicians (indeed, it was originally formed by them and then termed the Panel Medico-Political Union) is strongly opposing the scheme. The union was formed because the British Medical Association was not considered sufficiently representative of panel interests and its action not all that could be desired. It may be remembered that at the time of the passing of the insurance act the association was divided into two camps, for and against the act, and considerable ill feeling was aroused that has not entirely subsided. Unlike the association, the Medico-Political Union is registered as a trade union. It thus has the advantage in case of a medical "strike" that its members can interfere with those that do not strike without being open to a charge of "conspiracy," "wrongfully inciting" others to leave their employment and of "libel." Moreover, its accumulated funds cannot be attached. The union is opposed to the whole-time medical service on the grounds that: 1. The most intimately human of all professions enters into confidences in every phase of family life that would not be possible in the case of a paid official. 2. Free choice of physician (a strong point under the insurance act) would no longer be possible and the incentive of fair competition would be abolished, allowing the slowest mover to set the pace. 3. The pay, though excellent and attractive for newly qualified physicians, is not sufficient for experienced ones. 4. Any scheme brought forward with the hope of enlisting the support of physicians should compensate for the capital value of their practices.

Interallied Food Control

Conferences have taken place between the food controllers of America, France, Great Britain and Italy with the object of organizing an interallied food council. A wheat commission sits in London which buys in America, Argentina, Australia and India, thus abolishing competition in neutral markets. It is intended to establish three other commissions, for meat and fats, oil-yielding grains, and sugar. The council intends to form reserves of cereals in America and Europe to guard against bad harvests. Our food controller has recently issued an order regulating the use of wheat, rye, barley and dredge corn for the feeding of animals. Grain fit for human consumption must not be given to animals; grain unfit for human consumption can be so used only under license, except in the case of small quantities not exceeding 10 hundredweight.

Lectures on Shell Shock and War Neuroses

A course of instruction in shell shock and war neuroses, open to all medical officers of the British and American services and to civilian physicians is being given under the sanction of the War Office at the Maudsley Neurological Clearing Hospital, Denmark Hill. Applications for admissions are to be made to Brevet Lieut.-Col. F. W. Mott, M.D., F.R.S. The course consists of daily instruction and practice in the diagnosis and treatment and systematic lectures and demonstrations twice weekly. These are on: 1. The anatomy, physiology and pathology of the nervous and muscular systems applied to the diagnosis, prognosis and treatment of shell shock and war neuroses. 2. The physiologic and pathologic conditions underlying shock—emotional, commotional and surgical. 3. The methods of examining cases of functional nervous disorders (hysteria, neurasthenia and psychoses) and the determination of fitness for military service. 4. The methods of differential diagnosis of organic and functional disease and the combined condition. 5. The diagnosis of conscious simulation (malingering), unconscious simulation and exaggeration. 6. The general principles of treatment of functional diseases of the nervous system. 7. General aspect of the surgical side of neuromuscular disabilities. 8. General principles of psychology as applied to war neuroses and shell shock.

Another American War Hospital in Great Britain

The American Navy has taken over another hospital, which is established in the East Coast of Scotland. The American staff consists of twenty-two medical officers, sixty-three nurses, paymaster, clerical staff, orderlies and artisans. It was organized at Los Angeles by Dr. Rea Smith, surgeon, U. S. Navy, and the commanding officer is Dr. C. M. Devalin, U. S. Navy. The equipment has been brought from America. The hospital will receive not only Americans but also British patients from both the army and the navy.

Marriages

Lieut. Lee Franklin Turlington, M. C., U. S. Army, Birmingham, Ala., on duty at Camp Greenleaf, Fort Oglethorpe, Ga., to Miss Olivia Johnston White of Lynchburg, Va., September 17.

Lieut. Maurice Raschbaum, M. C., U. S. Army, New York City, on duty at Camp A. A. Humphreys, Accotink, Va., was married to Miss Justine Todd of New York City, March 27.

Lieut. Robert Byron Giles, M. C., U. S. Army, New York City, to Miss Fredericke Kröger of Spuyten Duyvil, New York City, September 12.

Lieut. Vivian John Neale, M. C., U. S. Army, to Miss Helen Theresa Douaire, both of Chicago, at Des Moines, Iowa, September 11.

George William Schaefer, Bridgeport, Ohio, to Miss Corynne Price Bush of Wheeling, W. Va., at Columbus, Ohio, August 29.

Lieut. Commander Howson White Cole, Jr., M. C., U. S. Navy, to Miss Mary Constance Wiggins, at Brooklyn, September 9.

Lieut. Raymond Williams Lewis, M. C., U. S. Navy, to Miss Alice Gregory Cragin, both of New York City, October 3.

Charles J. Stambaugh, Reidsville, Pa., to Miss Florence P. Newton of Lewistown, Pa., at Harrisburg, September 25.

Frederick Conrad Schadt, Williamsburg, Iowa, to Miss Louise Setzer of Middle Amana, Iowa, recently.

Claude Vernet Davis, Cleveland, to Miss Laura Sheridan of Connellsville, Ohio, September 21.

Deaths

Capt. Lorenzo Burrows, Jr., M. C., U. S. Army, Buffalo; College of Physicians and Surgeons in the City of New York, 1889; aged 51; a Fellow of the American Medical Association and the New York Academy of Medicine; ophthalmologist to the Buffalo General Hospital; a specialist in diseases of the eye; on duty with Buffalo Base Hospital No. 23; who had been in France since October, 1917; died from pneumonia, September 17.

Died in the Service
IN FRANCE
Capt. Lorenzo Burrows, Jr., M.C., U. S. Army, 1867-1918

Lieut. Arthur Lewis Beyerlein, M. C., U. S. Army, Chicago; University of Illinois, Chicago, 1912; aged 30; a Fellow of the American Medical Association; who was in the government service in the Canal Zone from 1910 to 1916, and was later on duty in the orthopedic department of the Walter Reed General Hospital, Washington, D. C.; died in that institution, October 10, from bronchial pneumonia, following influenza.

John T. Gilmour, Toronto, Ont. (license, Ontario, 1876); aged 63; for nearly twenty years warden of the Ontario Reformatory for Men; an active member and once president of the American Prison Association, and later parole commissioner for the provincial penal institutions; one of the best known administrators of penal institutions of America; died suddenly at his home, July 29, from heart disease.

Act. Asst. Surg. Charles B. Gruver, U. S. P. H. S., Waco, Texas; formerly of Rosman, N. C.; University of Maryland, Baltimore, 1902; aged 40; a member of the Medical Society of the State of North Carolina; at one time president of the Stroudsburg (Pa.), board of health; a member of the staff of the health department of Waco; died in a sanatorium in that city, October 7, from pneumonia.

Ludson Worsham, Evansville, Ind.; New York University, New York City, 1879; aged 63; a Fellow of the American Medical Association; surgeon of the Alaska Commercial Club from 1882 to 1884; chief surgeon of the Evansville and Terre Haute, and Evansville and Indianapolis railroads since 1896; at one time councilman at large; died at his home, September 29, from pneumonia.

David L. Haight, New York City; College of Physicians and Surgeons in the City of New York, 1864; aged 79; a member of the United States Sanitary Commission in 1862, and during the remainder of the Civil War assistant surgeon at the Douglas Hospital, Washington, D. C.; died at the Rockaway Country Club, Cedarhurst, L. I., September 30.

Lieut. Justin A. McCarthy, U. S. N. R. F., Lawrence, Mass.; Jefferson Medical College, 1918; aged 25; a Fellow of the American Medical Association; who came to New London, Conn., to assist in the treatment of influenza at the base hospital, died at the local hospital, New London, September 27, from pneumonia, following influenza.

Clinton E. Stark, Norwich, Conn.; New York Homeopathic Medical College, New York City, 1878; aged 64; once president of the Connecticut State Homeopathic Medical Society; a member of the board of trustees of the Norwich State Hospital since its institution; died at his home, September 26, from pneumonia, following influenza.

Russell H. Dean, Jacksonville, Fla.; Tulane University, New Orleans, 1875; aged 63; once vice president of the Florida Medical Association and president of the Duval County Medical Society and of the Lake County (Fla.) Board of Health; died at his home, September 28, from cerebral hemorrhage.

Theodore Fessler, Portland, Ore.; University of Oregon, Portland, 1904; aged 47; at one time a Fellow of the American Medical Association; great sachem of the Independent Order of Red Men for Oregon in 1911; died in the Good Samaritan Hospital, Portland, September 27, after a surgical operation.

Capt. Charles Alton Sturtevant, M. C., U. S. Army, Manchester, N. H.; Boston University, 1899; aged 43; a Fellow of the American Medical Association; medical officer of the Seventy-Fourth U. S. Infantry; died at Camp Devens, Ayer, Mass., September 24, from pneumonia, following influenza.

Asst. Surg. Hadley Howard Teter, Lieutenant (Junior Grade), U. S. Navy, Cleveland; Ohio State University, Columbus, 1916; aged 27; is reported to be one of the missing from the *U. S. S. Tampa,* which was torpedoed in foreign waters, September 26, while escorting a convoy.

Orion Vassar Wells, Westford, Mass.; Harvard Medical School, 1906; aged 37; a Fellow of the American Medical Association; first lieutenant, M. C., Massachusetts State Guard, and assigned to duty with the Nineteenth Infantry; died at his home, October 4, from pneumonia.

Edward Hastings Wiswall, Wellesley, Mass.; Boston University, 1887; aged 57; for five years assistant physician at the Westboro Insane Hospital; superintendent of the Wellesley Sanitarium; a member of the local school committee for twelve years; died at his home, October 7.

Arthur Kraft Petery, Norristown, Pa.; Medico-Chirurgical College of Philadelphia, 1908; aged 32; a Fellow of the American Medical Association; a member of the staff of the Norristown State Hospital; died in that institution, October 2, from pneumonia, following influenza.

Robert E. Moss, Riverside, Calif.; Marion-Sims College of Medicine, St. Louis, 1897; aged 45; a member of the Medical Society of the State of California, and president of the Riverside County Medical Society; died at his home, September 27.

Lieut. Pressly Robinson Brown, M. C., U. S. Army, Swepsonville, N. C.; North Carolina Medical College, Charlotte, 1914; aged 34; a Fellow of the American Medical Association; is reported in the *Official Bulletin* of July 15 to have been killed in action in France.

Died in the Service
IN FRANCE
Lieut. Pressly R. Brown, M. C., U. S. Army, 1884-1918

Capt. Philip John Keizer, M. C., U. S. Army, North Bend, Ore.; University of Oregon, Portland, 1914; aged 32; a Fellow of the American Medical Association; assigned to duty with the Thirtieth U. S. Engineers; was killed in action in *France,* in line of duty, July 13.

William Binder Shick, Philadelphia; Jefferson Medical College, 1907; aged 39; a Fellow of the American Medical Association; a specialist of diseases of the ear, nose and throat; surgeon to the Jewish Hospital; died, October 3, from pneumonia, *following* influenza.

Elbert Ellsworth Heaton, Lancaster, Mo.; *formerly* of Centerville, Iowa; College of Physicians and Surgeons, Keokuk, Iowa, 1896; aged 46; is reported to have died in his office, October 4, from a gunshot wound, self-inflicted, it is believed, with suicidal intent.

George Wells, Annapolis, Md.; College of Physicians and Surgeons in the City of New York, 1867; aged 74; for several years chief of the medical staff of the Annapolis Emergency

Hospital; clerk of the court of Anne Arundel County; died at his home, September 29.

George A. Jennings, Burlington, N. J.; Baltimore Medical College, 1902; aged 46; a member of the Medical Society of the State of New Jersey; athletic director of the public schools of Burlington; died, September 30, from pneumonia, following influenza.

William Armstrong DeWitt, Blossburg, Pa.; University of Pennsylvania, Philadelphia, 1908; aged 32; a Fellow of the American Medical Association; chief surgeon of the Blossburg State Hospital; died at his home, October 1, from pneumonia.

Lieut. Philip Melton Kyser, M. C., U. S. Army, Birmingham, Ala.; Vanderbilt University, Nashville, Tenn., 1910; aged 30; a Fellow of the American Medical Association; on duty at Camp Lee, Va.; died in that place, recently, from pneumonia.

Lieut. John Riley Lewis, M. C., U. S. Army, Gainesville, Texas; Fort Worth (Texas) University, 1912; aged 31; a Fellow of the American Medical Association; on duty at a training camp in Long Island, N. Y.; died at the camp, September 25.

Thomas Francis Leen, Boston; Harvard Medical School, 1901; aged 43; a Fellow of the American Medical Association; a specialist in internal medicine; formerly a member of the Boston school committee; died at his home, September 16.

Ernest Albert D. Watson; Pittsburgh; Howard University, Washington, D. C., 1909; aged 40; a colored practitioner, born in Jamaica, British West Indies; died at the West Penn Hospital, Pittsburgh, September 18, from acute nephritis.

Hyman Cohen, Boston; Harvard Medical School, 1918; aged 25; attached to the second medical service of the Boston City Hospital; died in that institution, September 30, from pneumonia, following influenza.

John R. Cross, Buxton, Iowa (license, Iowa, years of practice, 1886); aged 63; at one time a Fellow of the American Medical Association; was killed, October 1, in a grade crossing accident at Hamilton.

Max Maurice Fladen, New York City; University and Bellevue Hospital Medical College, New York City, 1909; aged 32; died at his home, September 30, from pneumonia, following influenza.

Charles Vinton Mathewson, Plainfield, N. J.; Harvard Medical School, 1878; aged 65; who retired several years ago to engage in the insurance business; died at his home, September 20.

Omar Perlie Badger, Boston; Harvard Medical School, 1918; aged 29; an intern in the Boston City Hospital; died in that institution, September 30, from pneumonia, following influenza.

Joseph Warren Tillson, Cohay, Miss.; University of Tennessee, Nashville, 1899; aged 44; a Fellow of the American Medical Association; died at his home, June 10, from heart disease.

Alexander Murdoch Polk, Winthrop, Wash.; Jefferson Medical College, 1887; aged 55; formerly a practitioner of Conconully, Wash.; died at his home, September 18, from heart disease.

William R. Black, Bolivar, Ohio (license, Ohio, twenty-eight years practice, 1896); aged 71; mayor of Bolivar; a veteran of the Civil War; died at his home, September 21.

John R. MacDaniel, Arkadelphia, Ark.; Jefferson Medical College, 1867; aged 78; also a druggist; died at his home, September 18, from cerebral hemorrhage.

John Flood, Chicago; Bennett Medical College, Chicago, 1873; Rush Medical College, 1889; aged 68; died at his home, September 28, from pneumonia.

Benjamin F. Severns, Marion, Ohio; Eclectic Medical Institute, Cincinnati, 1886; aged 69; died at his home, September 24, from cerebral hemorrhage.

George Roy Heaton, Rock Mart, Ga.; Atlanta (Ga.) School of Medicine, 1911; aged 31; died at his home, September 21, from [illegible] e of poison.

[illegible] **Rahling**, Chicago; Northwestern University [illegible] ol, 1906; aged 36; died at his home, September [illegible] onchopneumonia.

[illegible] **Thomas Lindsay**, Springfield, Ill.; Miami Medical [illegible] e, Cincinnati, 1869; aged 75; died in the Springfield [illegible] ital, September 20.

William F. Elmendorf, Buffalo; University of Buffalo, 1890; [illegible] ed 64; died at his home, September 28, from spinal meningitis.

The Propaganda for Reform

IN THIS DEPARTMENT APPEAR REPORTS OF THE COUNCIL ON PHARMACY AND CHEMISTRY AND OF THE ASSOCIATION LABORATORY, TOGETHER WITH OTHER MATTER TENDING TO AID INTELLIGENT PRESCRIBING AND TO OPPOSE MEDICAL FRAUD ON THE PUBLIC AND ON THE PROFESSION

PHILLIPS' PHOSPHO-MURIATE OF QUINONE COMP.

Report of the Council on Pharmacy and Chemistry

The following report on Phillips' Phospho-Muriate of Quinine Comp. has been adopted by the Council and authorized for publication.
W. A. PUCKNER, Secretary.

Phillips' Phospho-Muriate of Quinine Comp.[1] is sold by the Charles H. Phillips Chemical Co., New York. According to the published formula, each fluidrachm contains:

Phosphoric Acid	2 minims
Potassium Phosphate Magnesium Phosphate Calcium Phosphate Ferric Phosphate	2¼ grains
Quinin Muriate (equal to nearly ½ gr. Bi-Sulph.)	¼ grain
Strychnin	1/120 grain
Flavoring, Glycerin and Syrup, *q. s.*	

Some typical claims made for the preparation are:

> "With marked beneficial action upon the nervous system. To be relied on where a deficiency of the phosphates is evident."
>
> ". . . brace those tired nerves and aid that worn stomach with Phillips' Phospho-Muriate of Quinine."
>
> "The maintenance of a satisfactory blood pressure level free from intervals of depression may be accomplished by the use of Phillips' Phospho-Muriate of Quinine Compound in appropriate doses."
>
> "The quantities of quinin and strychnin in this preparation are so well balanced that they relieve the depression and fatigue from mental or physical exertion, without the necessity of recourse to alcoholic stimulation."
>
> "The other ingredients of Phillips' Phospho-Muriate of Quinine—phosphoric acid, and the phosphates of potash, magnesia, lime, and iron—are the most rational as well as convenient means of administering these tissue remedies, and of introducing phosphorus—the vitalizing constituent of the nervous system—into the organism."

The action of such a mixture as a whole is practically that of the sum of the actions of its constituents. The therapeutic action of strychnin and quinin are described in every textbook of therapeutics, but it is necessary to distinguish carefully between the various conditions in which these alkaloids have been used without discrimination, and those conditions in which they have been proved to be of value. While both have been widely used in a great variety of conditions, neither is of proved value in more than a distinctly limited range of diseases. The manufacturers of Phillips' Phospho-Muriate of Quinine Comp. seem to appeal to the less discriminating who use these alkaloids without any definite conception of exactly what they seek to accomplish with them. Quinin, although used by the uncritical in a host of diseases, has a definite field of usefulness in the treatment of malaria, both prophylactic and curative, but the required dose in the treatment of malaria is many times larger than that recommended in the Phillips' preparation. The claim that the "strychnin and quinin in this preparation are so well balanced that they produce a mild, buoyant effect, so advantageous, instead of alcoholic stimulation, to relieve depression and fatigue from mental or physical exertion" is nonsensical, if, indeed, it is not mendacious balderdash.

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[1] The evolution of "Phillips' Phospho-Muriate of Quinine Comp." from "Phillips' Wheat Phosphates" may be interesting. Every one knows that therapeutics tends to fashions, and "Phillips' Wheat Phosphates" appears to have had its inception as the result of the observation that super-refined white flour contains less phosphates than the corresponding amount of wheat. It was assumed that such flour must be deficient in an essential constituent, and the Wheat Phosphates preparation was apparently designed to fill the want. It was exploited for the relief of numerous conditions that were supposed, without satisfactory evidence, to result from this deficiency. When iron, quinin and strychnin mixtures became the vogue a quarter of a century ago, it was only natural to ride on the wave of popularity and the already widely advertised "Wheat Phosphates" was further enhanced—commercially—by the addition of the iron, quinin and strychnin, the amount of alkaloid added being practically negligible. Those who are not familiar with the various phases of the phosphorus, phosphoric acid, lactophosphate, lecithin, nuclein and glycerophosphate propaganda are referred to a report of the Council on Pharmacy and Chemistry in THE JOURNAL A. M. A., Sept. 30, 1916, p. 1033.

Calcium and potassium have important functions in the body, but any deficiency that may arise is usually attributable to an inability of the body to utilize that which is supplied, for there is seldom any deficiency of these salts in the food, and when they are needed they are best supplied as simple solutions of the salts in appropriate doses without all of the other constituents of Phillips' Phospho-Muriate of Quinine Comp.

Phosphoric acid exerts practically the same actions as other mineral acids, hydrochloric being usually preferred for internal administration in certain forms of indigestion, aside from which they are seldom used as such.

In the more recent literature for Phillips' Phospho-Muriate of Quinine Comp., we find the attempt to utilize the well known craze about phosphorus, which has been through so many phases, every one of which has had its day and has been discarded.

The phosphoric acid and phosphates present in Phillips' Phospho-Muriate of Quinine are of no more value in nervous diseases than is simple sodium phosphate which does not require the addition of a host of other ingredients for its action. As a matter of fact, the phosphates of calcium and potassium present in a dose of Phillips' Phospho-Muriate of Quinine are probably devoid of appreciable effect in practically all conditions.

To pretend that one who suffers from physical and nervous exhaustion can be materially benefited by this mixture is sheer nonsense and is unworthy of a moment's consideration by a clinician who is called on to treat such patients.

Iron is useful in anemia, as every one knows. Iron has practically no other field of usefulness in therapeutics. When it is indicated it should be administered in a simple form, such as the pill of ferrous carbonate, for example, and not in a "shotgun" mixture that is quite as likely to do harm as good.

The claim that a satisfactory level of blood pressure can be maintained by Phillips' Phospho-Muriate of Quinine is mentioned only to condemn as the limit of impudent therapeutic claims. It is an insult to the intelligence of any practitioner to pretend that any known agent or combination of remedial agents can maintain a uniform blood pressure in any one of innumerable conditions.

In short, Phillips' Phospho-Muriate of Quinine Comp. is a complex and irrational mixture exploited by means of unwarranted claims. It is a survival of the old days of therapeutic chaos when impossible and fantastic chemical formulas were gravely published and as solemnly accepted without question, and also without the slightest understanding on the part of many; when the most eminent of practitioners did not hesitate to give glowing testimonials for lithia waters that contained no more lithium than ordinary river water; when no therapeutic claim was too preposterous to receive acceptance, no theory too nonsensical to justify the use of all manner of claptrap mixtures for all manner of conditions.

Contrasting Casualty Lists.—The *Health Bulletin*, State Board of Health of North Carolina, has adopted the unique experiment of printing in its *Health Bulletin* the names of the boys from that state who have been killed or wounded in France and comparing it with lists of those killed at home by typhoid fever, those severely injured in the performance of duty, and those seriously injured through carelessness or ignorance in their home state. It is shown that in France, for this year up to August 1, eighty-six "Tar Heels" have given up their lives or have been wounded in battle. During the same period 1,379 citizens of the state have needlessly given their lives or suffered weeks of illness because of typhoid fever. The eighty-six who died or were wounded in France were in the performance of duty. The 1,379 who died or suffered in North Carolina from typhoid fever died or suffered from an absolutely preventable disease.

Correspondence

ABORTION AS A SEQUELA OF INFLUENZA

To the Editor:—In the epidemic of influenza now prevalent I have noticed that pregnant women are especially liable to die. They usually abort or contract the very pronounced type of pneumonia, with cyanosis, the lungs full of coarse, mucous râles, and death in from two to three days.

In Stroudsburg, where I assisted Dr. Angle, nearly every pregnant woman I saw died. Dr. Durham, who has just returned from a mining camp near Punxsutawney, reports a similar condition. I do not recall anything like this in previous epidemics and have seen no mention of the fact in this one.

Bacillus abortus of Bang is so closely allied to the influenza group that the question of their being identical is raised by these observations.

In Ziemssen's Encyclopedia, 1875 edition, in an article by Zuelzer, I find: "Pregnant women frequently suffer abortion. . . . This effect of influenza repeatedly verified in many epidemics . . . analogous phenomenon in other infectious diseases."

M. W. Ball, M.D., Warren, Pa.

CONTRIBUTIONS FOR BELGIAN AND FRENCH PHYSICIANS

To the Editor:—I beg to acknowledge through your columns the following contributions in cash to aid the civilian physicians of Belgium and France when they again return to their looted offices. The prospect now is that they will soon be able to do so. Meantime the money that I have forwarded to Professor Depage in LaPanne and the Comité d'appui des réfugiés de professions libérales through the Belgian and French Relief Associations of this city are accumulating in bank ready to be used whenever it is possible to do so.

Including the prior contributions, the sum total that I have been able to forward is $2,624.88, and the estimated value of the instruments that have been forwarded amounts to $4,360.

I wish particularly to acknowledge the very generous contributions of Dr. Gifford and his partners in Omaha. They have contributed $1,000 of the entire amount. Dr. C. T. Faries of Narberth, Pa., also most generously gave $10 a month for eight months, when he entered the service.

I trust that the members of the profession will be willing now to give more largely than before because the need is urgent. The villainous destruction which the Huns are visiting on even every little village has wiped out practically everything that our civilian confrères ever had. They will resume their work with nothing but willing hands and warm hearts. It is up to us to help them out of their troubles.

SUBSCRIPTIONS IN CASH

Dr. William G. Rowe, Blue Springs, Mo.	$ 5.00
Dr. Clarence T. Faries Narberth, Pa. (fifth, sixth, seventh and eighth contributions)	40.00
Dr. H. Gifford and his partners, Drs. James M. Patton, W. F. Callfas and John B. Potts, Omaha	500.00
Dr. Anna Odell, Detroit	10.00
Dr. Clyde L. Cummer, Cleveland	5.00
Dr. C. W. More, Eveleth, Minn (through Dr. John M. Robinson, Duluth)	25.00
	$585.00
Additional interest	6.54
	$591.54

DONORS OF INSTRUMENTS

Dr. Alexis Dupont Smith, Philadelphia; Miss E. K. Bray, New York; sundry physicians through Dr. J. M. Robinson, Duluth, Minn.; Dr. Walter J. Freeman, Philadelphia; Widow of Dr. A. T. Clark, Shickshinny, Pa.; Dr. F. S. Spearman, Whiting, Iowa; Dr. Charles M. Montgomery, Philadelphia; Dr. W. Estell Lee, Philadelphia; Dr. C. L. Cummer, Cleveland; Dr. L. B. Pilsbury, Lincoln, Neb.

Messrs. Harvey R. Pierce & Co. have very kindly put these instruments in order and packed them for transmission to Europe.

W. W. Keen, M.D., Philadelphia.

Major, M. C., U. S. Army.

ATTITUDE OF CHRISTIAN SCIENTISTS IN THE PRESENT EPIDEMIC OF INFLUENZA

To the Editor:—Your optimistic current comment (The Journal, Oct. 12, 1918, p. 1223) concerning the change in attitude of the public toward public health methods would be highly reassuring if it were true in the measure that the comment indicates. You say, "When health authorities place a ban on public gatherings, when they insist that the windows of public conveyances be kept open, when they insist on absolute quarantine in order to stop the spread of the disease, the public is ready to obey, and does obey to the *fullest* measure" (italics mine). Further, "Another feature is the confidence of the public in public health authorities, apparently the result of the intense education of the public in prophylaxis of disease which has been going on during the past decade."

I beg to call your attention to a special telegram to the Philadelphia *Public Ledger*, dated Boston, October 7, which reads thus:

> In connection with the influenza epidemic, the directors of the "Mother" Christian Science Church here announce that "the mind is a source of contagion" and that "ailments can contaminate only as diseased images are held before the thought and paraded before excited imagination preliminary to having them expressed on the body through fear and apprehension."
>
> They declare that "disease is being industrially promoted through the common avenue of mesferic [sic] wear," and quote Mrs. Eddy as follows:
>
> "At a time of contagious disease, Christian Scientists endeavor to rise into consciousness to the true sense of omnipotence of life, truth, and love, and this great fact, as Christian Science realized, will stop a contagion."
>
> *The church held its regular services Sunday, explaining that good rather than harm was effected. The health officials had asked churches to close during the influenza epidemic* [italics mine].

This sort of stuff is doubtless doped out in every Eddyite congregation in the United States, and even the least observing and he of dullest comprehension must have discovered that the following of this cult is large. I have been told that Chicago is a veritable hotbed of Eddyism.

Would it not be wise to bend some editorial energies, if any are available, to the scotching or killing of this skunk in lieu of complacently recording dubious impressions? Here at home the Eddyites have not been able to get by with their "activities" unchallenged.

C. B. Burr, M.D., Flint, Mich.

ILL ADVISED REFERENCES TO TREATMENT IN ARTICLES ON PUBLIC HEALTH PROBLEMS

To the Editor:—The attached clipping is a part of a "syndicated article" that has appeared in a number of newspapers. It strikes me that this line of so-called information is wrong. In writing on any public health problem, the writer should avoid reference to treatment. The treatment of any particular disease should be decided by the physician in charge after he has examined the patient. It is not right to state baldly that "drugs are virtually impotent." The patient calls the physician for his own relief and benefit, and if he believes all of this article he will probably send to the drug store and buy his own aspirin. And, by the way, is this writer in the pay of the Bayer people and helping them to put across their advertising campaign? Self medication is now one of the great banes of the American people, and such articles, either in the public press or in board of health publications, are the greatest incentive to such "doping." A carefully considered statement on any medical subject is often misquoted both in the medical and the lay press, as instance the comment aroused by Osler's age limit and Bevan's talk on pneumonia some years ago, both of which are still wildly and widely misquoted in both lay and medical publications. No two cases of any acute infection can be treated in exactly the same manner; the age and surroundings of the patient, the condition of the heart, kidneys, lungs and other organs must be taken into consideration, and the very necessary steps taken to avoid dangerous and possibly fatal complications and sequelae. Aspirin may be dangerous or even fatal in some cases, as may other salicylates. Another bad effect of self medication is that a case improperly diagnosed as epidemic influenza will not be reported, and may be the starting point of a dangerous epidemic. In fact, a case so diagnosed may be almost any one of the infectious diseases. I have seen severe cases of smallpox diagnosed as grip in the early stages, and an epidemic start therefrom.

The authorized public health publications of many states and occasionally of the Public Health Service have been guilty of the actions of which I complain. I think these mistakes are largely due to carelessness on the part of these writers, and calling their attention to them will have a good effect. I was one time the state health officer of one of the Southern states, and know how easy it is to overlook important matters and to make mistakes of judgment.

F. B. Young, M.D., Gering, Neb.

[Comment.—The clipping to which our correspondent refers reads:

> It should be remembered, too, in treating patients who have acquired "Spanish influenza," care and sanitation are the all-important points. Drugs are virtually impotent, although aspirin may be administered to relieve headaches and body pains. With proper attention the disease will run its course in three days and the patient fully recover in less than two weeks. Death seldom ensues, except through neglect.

No doubt it would be in the interest of public health and the public pocketbook were medicines taken only on the advice of physicians. The objections to the lay advertising of aspirin were thus stated by the Council on Pharmacy and Chemistry:

> The public does not know, as physicians do, that headaches are merely symptoms of other, sometimes very serious conditions, and that they are often the signal for the need of a thorough physical examination and diagnosis. It is true that they are often also the symptoms of very minor derangements, which will right themselves spontaneously; and that, in such cases, drugs like aspirin may give relief and may do no harm. The patient, however, is not educated to distinguish one class from the other, and therefore anything that tends to promote the indiscriminate use of such remedies as aspirin itself is not always harmless. Alarming idiosyncrasies are sufficiently common that the use of the first doses, at least, should require medical supervision.—Ed.]

Queries and Minor Notes

Anonymous Communications and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted, on request.

PURCHASE OF MEDICAL OFFICERS' EQUIPMENT THROUGH QUARTERMASTER'S DEPOT

To the Editor:—In The Journal, October 5, you say that officers' uniforms are available through the quartermaster's department, one depot being located in Chicago. Will you please give me the address?

H. T. K., Joliet, Ill.

To the Editor:—I have been examined for a commission in the Army and expect to be commissioned soon. Will you please tell me if I can buy my uniform and equipment at cost from a quartermaster as provided in the last clause of the "Man Power Bill"? If so, can I get them from the quartermaster of any camp?

L. W. C., Franklin, N. Y.

Answer.—In The Journal, October 5, page 1142, appears an item relative to the furnishing of uniforms through various quartermasters' depots. The seven depots mentioned are at New York, Washington, Atlanta, Ga., Fort Sam Houston, Texas, San Francisco, Chicago and St. Louis. Officers desiring to purchase uniforms may communicate with the nearest quartermaster's depot. We are informed by the officer in charge of the quartermaster's depot at Chicago that they are authorized to sell to newly appointed officers, on presentation of the telegram notifying them of their appointment or commission, any articles on the list of goods furnished, at the prices and in the maximum quantities shown. The Chicago sales room is located in Bungalow A, Thirty-Ninth Street and Winchester Avenue. Newly appointed officers residing outside of Chicago may communicate by mail with this department, or with the nearest quartermaster's depot, and the proper forms and information relative to purchase of equipment will be sent to them. The list of equipment and prices is not available for general publication, but will be furnished by the quartermaster to any officer on application. It includes practically everything that the officer will require.

Medical Education and State Boards of Registration

COMING EXAMINATIONS

ARKANSAS: Little Rock, Nov. 12-13. Sec., Regular Bd., Dr. T. J. Stout, Brinkley, Ark.; Sec., Eclectic Bd., Dr. C. E. Laws, 803½ Garrison Ave., Ft. Smith.

CALIFORNIA: Sacramento, Oct. 21-24. Sec., Dr. C. B. Pinkham, State Capitol, Sacramento.

CONNECTICUT: New Haven, Nov. 12-13. Sec., Regular Bd., Dr. C. A. Tuttle, 196 York St., New Haven; Sec., Eclectic Bd., Dr. James E. Hair, 730 State St., Bridgeport; Sec., Homeopathic Bd., Dr. E. C. M. Hall, 82 Grand Ave., New Haven.

MAINE: Portland, Nov. 12-13. Sec., Dr. Frank W. Searle, 776 Congress St., Portland, Me.

MASSACHUSETTS: Boston, Nov. 12-14. Sec., Dr. Walter P. Bowers, No. 1 Beacon St., Boston, Mass.

NEVADA: Carson City, Nov. 4. Sec., Dr. S. L. Lee, Carson City.

TEXAS: Dallas, Nov. 19-21. Sec., Dr. M. F. Bettencourt, Mart.

WEST VIRGINIA: Charleston, Nov. 19-21. Sec., Dr. S. L. Jepson, Masonic Bldg., Charleston.

Minnesota June Examination

Dr. T. S. McDavitt, secretary of the Minnesota State Board of Medical Examiners, reports the oral, practical and written examination held at Minneapolis, June 4-7, 1918. The examination covered 15 subjects and included 80 written questions. An average of 75 per cent. was required to pass. Forty-one candidates were examined, all of whom passed. Six candidates were licensed through reciprocity. The following colleges were represented:

PASSED

College	Year Grad.	Per Cent.
Northwestern University	(1918)	92
University of Illinois	(1918)	89
Boston University	(1915)	85
University of Minnesota		(*) 86, 86, 86, 87, 87, 88, 88, 88, 88, 89, 95; (1918)† 77, 80, 83, 86, 87, 87, 88, 89, 89, 89, 89, 90, 90, 91, 91, 91, 92, 92, 92, 92, 92, 93, 93; (1918) 91.
Syracuse University	(1917)	87, 91
Jefferson Medical College	(1917)	86

LICENSED THROUGH RECIPROCITY

College	Year Grad.	Reciprocity with
Northwestern University	(1909)	N. Dakota
State University of Iowa Coll. of Med.	(1901)	Iowa
University of Louisville	(1910)	Tennessee
Medical College of Virginia	(1910)	Virginia
Marquette University	(1915)	Wisconsin
Milwaukee Medical College	(1911)	Wisconsin

*Degrees held pending removal of conditions.

†Received M.B. degree on completion of four years' work. M.D. degree granted on completion of internship.

Rhode Island July Examination

Dr. B. U. Richards, secretary of the Rhode Island State Board of Health, reports the practical and written examination held at Providence, July 11-12, 1918. The examination covered 7 subjects and included 70 questions. An average of 80 per cent. was required to pass. Four candidates were examined, all of whom passed. The following colleges were represented:

PASSED

College	Year Grad.	Per Cent.
Maryland Medical College	(1913)	83
Tufts College Medical School	(1918)	84.7, 89.4, 91.2.

Utah July Examination

Dr. G. F. Harding, corresponding secretary of the Utah State Board of Medical Examiners, reports the written examination held at Salt Lake City, July 2-3, 1918. The examination covered 19 subjects and included 100 questions. An average of 75 per cent. was required to pass. Three candidates were examined, all of whom passed. The following colleges were represented:

PASSED

College	Year Grad.	Per Cent.
Rush Medical College	(1917)	84.8
Johns Hopkins University	(1918)	79
University of Maryland	(1917)	79.4

Dr. Harding also reports that 3 candidates, including 1 osteopath, were licensed through reciprocity, July 5, 1918. The following colleges were represented:

LICENSED THROUGH RECIPROCITY

College	Year Grad.	Reciprocity with
Denver College of Medicine	(1883)	Colorado
Columbia University	(1897)	Colorado

Book Notices

THE DISPENSATORY OF THE UNITED STATES OF AMERICA. Thoroughly revised, largely rewritten and based on the ninth revision of the United States Pharmacopoeia and the British Pharmacopoeia, 1914. By Joseph P. Remington, Ph.M., F.C.S., chairman of the Committee of Revision of the Pharmacopoeia of the United States of America; Horatio C. Wood, Jr., M.D., Professor of Pharmacology and Therapeutics in the University of Pennsylvania; Samuel P. Sadtler, Ph.D., LL.D.; Charles H. LaWall, Ph.M., Associate Professor of Theory and Practice of Pharmacy in the Philadelphia College of Pharmacy; Henry Kraemer, Ph.G., Ph.D., Professor of Botany and Pharmacognosy in the University of Michigan; and John F. Anderson, M.D., Director of the Research and Biological Laboratories of E. R. Squibb & Sons. Twentieth edition. Buckram. Price, $12. Pp. 2150. Philadelphia: J. B. Lippincott Company, 1918.

This book and the authors are so well known that words of introduction are unnecessary. We find the statement on the title page to be strictly true; the volume has been thoroubly revised and largely rewritten. The scope of the works of reference consulted in its compilation seems to have been broadened. Aside from the United States and British Pharmacopeias, the National Formulary and New and Nonofficial Remedies, more than 200 titles appear in the list of journals, etc., used for reference. It is pleasing to note that the statements quoted from these sources are treated in a critical manner; in fact, the policy of constructive criticism seems to have been adopted, a thing not very pronounced in previous editions. A valuable feature is the thorough manner in which the Federal Food and Drugs Act and the Harrison Narcotic Act are elucidated. The general arrangement of the text is the same as in previous editions. Part I, Pages 1 to 1222, contains the discussion of the articles described in the United States and British Pharmacopeias. As an aid to reference, a uniform style of treatment has been adopted; and, as previously, various features, such as properties, uses, preparation and commercial history, are set off by boldface type. Incompatibilities receive special attention and always appear at the end of the paragraph on uses. In Part II are considered those articles that are described in the National Formulary and New and Nonofficial Remedies, and those other things that are thought to be of sufficient interest to warrant mention. Part III, Section I, contains with a few exceptions a reprint of Part II of U. S. P. IX, Appendixes I to XIII inclusive of the British Pharmacopeia, and numerous tables of specific gravity and the like. Part III, Section II, contains Part I of the National Formulary in abstract. With all, the United States Dispensatory, Twentieth Edition, is a valuable book of reference, and this encyclopedia of drugs should be in the possession of every physician who aims to have an efficient reference library.

THE INDIAN OPERATION OF COUCHING FOR CATARACT INCORPORATING THE HUNTERIAN LECTURES DELIVERED BEFORE THE ROYAL COLLEGE OF SURGEONS OF ENGLAND. By Robert Henry Elliot, M.D., B.S., Sc.D. Cloth. Price, $3.50. Pp. 94, with 45 illustrations. New York: Paul B. Hoeber, 1918.

This booklet represents the Hunterian lectures delivered before the Royal College of Surgeons of England in 1917. The work of Colonel Elliot is perhaps the most important done on this subject. He presents the history of couching beginning with the operation first described by Celsus, following with the technical methods and statistical material, and discusses the pathologic anatomy of couched eyes based on a collection of fifty-four eyeballs which he himself presented to the Museum of the Royal College. This is believed to be the most valuable collection in the world. The final chapters concern the diagnosis and clinical care of these cases.

THE ESSENTIALS OF MATERIA MEDICA AND THERAPEUTICS FOR NURSES. By John Foote, M.D., Assistant Professor of Therapeutics and Materia Medica, Georgetown University School of Medicine. Third edition. Cloth. Price, $1.75. Pp. 310. Philadelphia: J. B. Lippincott Company, 1918.

This edition is based on the new pharmacopeia, New and Nonofficial Remedies, and on Wood's "Pharmacology and Therapeutics." The book is practical; much of it is in outline form. The last hundred pages consist of ready reference tables, lists of drugs, etc., which should be quite helpful.

Society Proceedings

COMING MEETINGS

American Public Health Association, Chicago, Dec. 9-12.
Assn. for S. & P. of Inf. Mort., Asheville, N. C., Nov. 11-14, 1918.
N. Y. and New England Assn. of Railway Surgs., N. Y. City, Oct. 21.
Southern Medical Association, Asheville, N. C., Nov. 11-14, 1918.
Virginia State Medical Society, Richmond, Oct. 22-25.
Western Roentgen Society, Chicago, Nov. 20-22.

AMERICAN ASSOCIATION OF OBSTETRICIANS AND GYNECOLOGISTS

Thirty-First Annual Meeting, held at Detroit, Sept. 16-18, 1918

The President, Dr. Albert Goldspohn, Chicago, in the Chair

Stab Wound Drainage in Pelvic Infections

Dr. H. Wellington Yates, Detroit: It should be our constant endeavor to close without drainage, so far as safety will permit. Drainage materials should be removed earlier than is done in the general practice now obtaining. The great majority of all infected areas in the pelvis are suitable for culdesac or stab wound drainage. The abdominal incision should be left free to close by primary union. Stab wounds are securely and quickly united after the drainage is withdrawn, with no fear of subsequent hernia. The musculature of the areas usually chosen for stab wound drainage is our greatest asset to a speedy closure of the drainage opening.

DISCUSSION

Dr. Gordon K. Dickinson, Jersey City, N. J.: Drainage is a misnomer. Gauze does not drain. It is a local irritant and because of that property it walls off the local processes to a certain extent and makes things fairly safe. About ten years ago I made a study as to the value of the omentum in abdominal drainage, and I came to the conclusion then, and I feel the same now, that the omentum, properly applied, will drain more in ten minutes than any gauze will take out in a day.

Dr. J. Henry Carstens, Detroit: I have not drained for I do not know how long. I clean out the abdomen thoroughly without washing it. I mop it out and then close the incision without drainage.

Dr. John W. Keefe, Providence, R. I.: Hard rubber drainage tubes in the abdomen have been largely discarded. Most surgeons feel that a hard rubber drainage tube should not be put next to the intestine. There is no question that an incision into Douglas' pouch for drainage is a desirable thing in a few cases. Looking back over the literature of gynecology one can see how many patients have died from the placing of drainage tubes in the pelvis and the withdrawal by nurses of the serum that formed. As soon as surgeons began to close the abdomen and not interfere with nature, these patients recovered.

Dr. Charles L. Bonifield, Cincinnati: Dr. Keefe said that when surgeons began to keep drainage tubes out of the abdomen we got better results. While that is partly true, it is not the whole truth. One of the reasons we get better results now is that abdominal surgeons are improving their technic, and drainage becomes less necessary.

Dr. Hugo O. Pantzer, Indianapolis: I concur in what Dr. Bonifield says, but there are cases in which we cannot get along without some form of drainage, cases with an accumulation of pus indicating that the peritoneum is unable to cope with it at that time, and hence some form of drainage is necessary.

Pathologic Conditions of the Pelvic Viscera, the Result of Induced Abortions Causing Sterilization

Dr. Francis Reder, St. Louis: All abortions, whether induced or not, pave the way, sooner or later, for sterilization of the woman. An instrumentally induced abortion is more prone to cause sterilization than an abortion induced by therapeutic measures. The resultant pathologic changes in the pelvic organs, following an abortion, can be judged only vaguely. An abdominal section on a healthy woman who, in previous years, has had her pregnancies interrupted, causing sterilization, and who now desires to have a child, is a justifiable procedure after all therapeutic and minor gynecologic measures have proved of no avail. In the application of these measures, an approximate time limit of no less than two years, and of no more than three years, can be assumed. The correction of the pathologic conditions present may or may not enable the woman to become pregnant. Nothing definite can be formulated from a surgical measure undertaken to remove a barrier to pregnancy.

Cesarean Section Under Local Anesthesia

Dr. William Mortimer Brown, Rochester, N. Y.: The chief conditions for which this form of anesthesia may be chosen are myocarditis with relaxed muscle, toxemia with urinary insufficiency, pulmonary tuberculosis, and other conditions that may contraindicate a general anesthetic.

Cesarean Section

Dr. Abraham J. Rongy, New York: My experience with this operation consists of 109 cases, eight of which terminated fatally. During a period of twelve years I saw approximately 1,500 women in labor, all of them presenting some form of dystocia. Out of this great number I resorted to cesarean section eighty-two times. Cesarean section has no place in eclampsia when nature has already commenced to do its work, that is, when labor has already set in. In such cases large doses of morphin are the best form of treatment. Cesarean section has no place in the preeclamptic stage. In such cases one always has time to induce labor, and the results are usually very satisfactory. Only he who is well trained in obstetrics has a right to decide on this operation. A general surgeon has not the necessary knowledge to be competent to pass judgment on such an important question — important not only to the woman and to her future pregnancies, but also to the nation. If cesarean section is performed indiscriminately, there is bound to be a decrease in the birth rate, for the average woman will not submit too many times to this operation. For this and many other reasons, cesarean section should be left entirely to the well trained obstetrician.

Treatment of Pregnancy Toxemia

Dr. George Clark Mosher, Kansas City, Mo.: The technic that involves least shock consists of: (1) Preliminary gradual dilatation by Hegar's dilators up to No. 20; (2) Voorhees bag No. 4, if at term, introduced by Reed's method—cigaret roll held by Pean's forceps; lavage with sodium bicarbonate, 2 per cent., after uterus is emptied. Cases of the fulminating type, long hard cervix (in which no vaginal examination has been done), are best treated by classical cesarean section. When after contamination by frequent digital examination, infection is almost surely to be expected, a Porro or other hysterectomy should be done in the interest of the mother. I have had 95 per cent. recoveries of mothers, and 85 per cent. of the children at term. From my own experience, and that of other observers, including a report by Dr. Ben Meyers of Alaska, who finds that in the last year, an unusually cold wet season, 12 per cent. of his cases suffered from toxemia—the conclusion is drawn that the weather does at least aggravate the tendency to this condition. As there is a close relation between the toxemia and the nervous system, is it not also fair to ascribe to the war an incidental effect as a causative factor?

Observations on Interned Venereal Patients

Dr. James E. Davis, Detroit: All cases of the series were examined serologically by the state board. Bacteriologic examinations of the smears taken from the urethral meatus, Bartholin's duct meatus, cervix uteri, and vagina were repeatedly made. Methylene blue and gram strains were employed. Patients were pronounced cured after the clinical disappearance of all lesions, and after obtaining negative Wassermann reactions before and after provocative arsphenamin injections and after five consecutive smears, preceding which provocative doses of gonococcal vaccine had been administered. The average age of the patients was 17 years, and fourteen were married. The average length of time patients were confined in the hospital was thirteen weeks. The average cost to the state per patient was $195. There were ninety cases of gonorrhea and syphilis, forty-six of syphilis, seventy-two of gonorrhea with positive laboratory findings, and ten of gonorrhea, clinically positive, with laboratory findings negative.

Recognition and Management of Labor Injuries

Dr. Arthur J. Skeel, Cleveland: I wish to emphasize four points: 1. Limiting or entirely avoiding vaginal examinations during labor is a routine preliminary part of the technic of primary repair of labor injuries. 2. Immediate inspection of the cervix, with primary repair of its injuries, reduces the risk of subinvolution and of uterine displacement. 3. The routine use of buried sutures in the perineum for the repair of second degree lacerations permits accurate coaptation and restoration of the parts. 4. Perineal lacerations are more surely repaired than is subpubic damage. Therefore, slow delivery and skill in directing the small diameters of the head through the vulvar ring should be sought. Forcing the head against the pubic arch produces more damage than it prevents.

Vertigo of Menopause

Dr. K. I. Sanes, Pittsburgh: In most of our patients the vertigo was of the objective type, that is, they experienced a sense of rotation around them of the visible or palpable environments. In some of them the vertigo was of a subjective type, a sensation of motion of the body itself. A few of our patients described the vertigo as a sort of swimming movement, a feeling of being intoxicated, an extremely embarrassing condition (the pseudonarcotism of Tilt). Vertigo was seldom the only prominent menopause symptom; it was almost always accompanied by hot and cold flashes, cold perspiration, palpitation, blurred vision, flickering before the eyes, headache, nausea, tinnitus, etc. The relation of vertigo to climacteric functional hypertension is of interest, and it is claimed by some that it is responsible for the menopause vertigo. Excluding as far as possible the cases of organic hypertension (cardiovascular and renal), we found 102 patients with vertigo that had their blood pressure specified on their records, and of these only 45 or 46 per cent. had their blood pressure above 150, and only 20 or 30 per cent. above 160.

In most of our cases, the vertigo was only slight, just a mild dizziness; in others it was so severe that they feared walking by themselves on streets on account of the frequent falls and even loss of consciousness during the attacks of vertigo. If the case can definitely be diagnosed as that of climacteric vertigo, the treatment to be outlined must be that of menopause in general.

The results obtained from the use of ovarian substance, while sometimes strikingly good, are so frequently negative as to raise the question whether it has within it the same finished product or products that the internal secretion consists of; and if it has, whether it is competent to take care of the functional changes of the correlated endocrine glands brought about by the functional changes of the ovarian secretion.

The Heart of a Pregnant Woman

Dr. Louis Burckhardt, Indianapolis: An early diagnosis is the chief factor for successful therapeutics. The menstrual disturbances, the aversion to physical exercise and the vasomotor symptoms will help greatly to single out suspicious cases. To depend on marked objective changes in the heart and the general system will lead to a loss of valuable time. If a heart affection has progressed to a point where drastic measures are unavoidable, irreparable damage has been inflicted on mother and fetus. Under drastic measures I include prolonged and absolute rest in bed, the use of opiates and large doses of digitalis; all these must interfere with a normal metabolism, so essential in this condition.

The first prophylactic steps ought to prevent impregnation, the prohibiting of marriage or the avoiding of conception. If, however, conception has taken place, the pregnancy, in all but the severest cases, must be carried to term. The interruption of pregnancy offers as many chances of a cardiac breakdown as a normal well conducted delivery—excepting an abortion induced before the formation of the placenta has begun. If a patient with a well compensated heart lesion presents herself for prenatal care, we must impress on her mind the necessity of preservation of energy. Saving alone does not suffice, but working up of new vital forces is needed. Not rest alone, but rest and exercise. We demand regular exercises and careful attention to elimination in every normal case; we must control both most minutely in heart cases. The blood pressure readings will assist greatly in controlling the patient's work. Between the thirty-fourth and the thirty-fifth week of pregnancy, daily observations will be necessary in order to determine the proper time of interference. During this period such patients are best strictly confined to bed. As soon as settling has occurred, a considerable amelioration of symptoms is frequently observed and the patient may be given more liberty of action.

(*To be continued*)

COLORADO STATE MEDICAL SOCIETY

Forty-Eighth Annual Meeting, held at Estes Park, Sept. 9-11, 1918

(*Concluded from page 1246*)

Spastic Irritability of the Intestinal Tract

Dr. Julius L. Mortimer, Denver: A spastic state is due to exaggerated physiologic tonic contractions either of circumscribed areas or of entire intestinal segments, or to cramplike constrictions of the peristaltic waves. The intensity and duration of this condition varies according to the disposition of the patient and the nature of the prevailing cause. Prevailing causes are to be sought in the abnormal irritation from the intestinal contents, or in mechanical or chemical reflexes by the formation of large amounts of liquid or gaseous decomposition products. An increase of intestinal contents alone will often produce abnormally increased motility. This may be a consequence of hurried eating or poor mastication. Large undigested food substances as well as foreign bodies will generally pass through the small intestine rapidly without any manifestations. Disturbances will occur usually in the large intestine, where local spasms will be intensified by the occlusion of the foreign body.

Inflammations and new growths of the intestinal wall will result in an increased irritability of the automatic centers of motility. A frequent cause of intestinal spasm as a result of toxic action is found in lead poisoning and nicotin poisoning. Proctospasm may be caused by irritation through the sacral autonomic system, the pelvic nerve, as in tabetic crises, hysteria and neurasthenia.

DISCUSSION

Dr. Leonard Freeman, Denver: Perhaps the most startling and most characteristic form of spasmodic obstruction is that which takes place in the small intestine, usually in the lower portion of the ileum, where a section of bowel not more than from 3 to 6 inches in length will contract to the limit so that it is hard and white and bloodless, not bigger than a lead pencil or fountain pen, and so firm that one can pick it up by one end during a surgical operation and it will stand out straight without bending. This obstruction may take place in many portions of the intestinal canal, but it is usual to find it in one particular place. The contraction is so cut off from the rest of the bowel that the walls of the adjacent intestine are perpendicular. The causes of this obstruction are extremely obscure. The only thing we can say is that it is due to a reflex irritation arising generally in the intestinal canal itself, but possibly arising in other portions of the abdominal cavity like a twisted ovarian pedicle or strangulated hernia, or a twisted testicle or vein. It may follow any kind of surgical operation.

Dr. J. E. Matlack, Longmont: Spasm of the gastro-intestinal tract is both a great help and a great hindrance to diagnosis by means of the roentgen ray. It is a help in that many of the roentgen signs of disease of the stomach, for instance, are due to spasm, to deformity of the duodenum in duodenal ulcer as the result of spasm of that portion of the intestine, and in that way the diagnosis can be made definitely. A valuable method of differentiation between spastic and organic conditions of the stomach is repeated roentgen examinations and the administration of the tincture of belladonna.

Fractures of the Tibia

Dr. William Senger, Pueblo: During the past three years we have treated ninety-two cases of tibial fractures; twenty-five were compound and forty-four comminuted; eight involved the knee joint and twenty-eight the ankle. Amputation because of thrombosis was necessary in one case. As soon as possible the fractured leg is roentgenographed. The preliminary treatment of simple fracture consists of placing the limb in a blanket splint resting on a pillow and further protected by sand bags. Ice caps are applied and nothing further done until the swelling has nearly disappeared. The fracture is then reduced under the fluoroscope. When thus treated, we have never had a simple tibial fracture that has not given good results.

Comminuted fractures can usually be treated as simple fractures; but when the fracture involves the ankle joint or the knee, it may be impossible to reduce and fix properly, except by open operation. Likewise, it is the rule that an open operation is almost imperative in a comminuted spiral fracture with the fibula splintered at a higher level. We do not use the intramedullary autogenous graft. We feel that destruction of the bone marrow is a mistake. In open operations we have completely abandoned the use of all metallic substances for fixation. The autogenous graft answers every purpose and avoids the possibility of future irritation. In the treatment of compound fractures we follow the Carrel-Dakin method. It has proved most satisfactory. In a compound fracture the soft parts should never be sutured in the first aid dressing. It is far better to pour half strength tincture of iodin into the wound and about the surrounding parts. After this has dried, a loose, sterile dressing should be applied, the limb placed in a blanket splint, immobilized, and, if possible, the patient sent to a hospital for further treatment.

The von Pirquet Test in Four Hundred and Sixty-Four Children

Dr. Emanuel Friedman, Denver: These patients ranged in age from a few months to 18 years. The acutely ill were excluded. The majority had abundant opportunity for infection. Most of the children were of tuberculous parents, many of whom had been inmates of sanatoriums in which they have had thoroughly inculcated rules of prophylaxis, which were scrupulously observed in many of the homes. The material conformed in kind with that on which most reports bearing on the frequency of childhood tuberculosis are based.

Of the 464 children tested, 39.8 per cent. reacted positively. Under 1 year, almost 12 per cent. reacted positively; from 10 to 14 years, 55 per cent., and from 14 to 18 years, only 51 per cent. The highest number of positive reactions was noted during the 11 to 13 year period, with 66.7 per cent.; and the lowest at the 5 to 6 year period, with only 13 per cent. positives. A comparison of these figures with those obtained at other sources warrants the conclusion that tuberculous infection among children in Colorado, while not as frequent as in Europe, is certainly no less frequently observed than in other American cities, barring New York.

Water Hemlock Poisoning

Dr. Mary R. Stratton, Denver: Eleven boys, between the ages of 8 and 12 years, were seriously poisoned by eating the root of the water hemlock or *Cicuta occidentalis*. Two of the cases were fatal. The boys had eaten the root after 6 o'clock while out on the grounds after their evening meal. They were taken sick in about an hour after eating. Those first taken sick had been in convulsions between thirty and forty minutes when I first saw them—others for a much shorter time. The sickness began with acute cramp or severe pain in the stomach, with an inclination toward a bowel movement, and vomiting. Mostly the vomit was a clear, frothy fluid. Those that vomited the stomach contents were not so sick. They then became dazed and fell wherever they were and went into the most frightful convulsions and unconsciousness. None of them remembered anything about the events of that night when they awoke in the morning. The spasms were of a tonic character, with cyanosis and frothing at the mouth. The pupils were widely dilated, with the eyes open, eyeballs rigid and no corneal reflex. With some, the eyes were rolled up and the head drawn backward when they went into the convulsions, and they became rigid in that position. In the case of others, the eyes were bent downward and the head forward. The jaws became locked, and it was impossible to give them anything by mouth. The legs were somewhat parted and partly flexed. The arms partly flexed and held from the body, the hands clenched and finger nails blue. The muscles of the whole body were rigid and hard. In those who had been in convulsions some time, the pulse was fast, irregular and weak. During the severe convulsions, the breathing was interfered with to such an extent that the face was blue and livid, and one wondered if they might not die from suffocation. The external surface of the body was cold. There was no bowel action or urination during the convulsions. Once in a while the convulsions would relax only to return again.

The treatment consisted of stomach lavage with a weak tannic acid solution, hypodermic stimulation, chloroform inhalations for the convulsions or twitching, and a dose of salts in the morning. Those who vomited and evacuated the stomach thoroughly at the beginning had a good prognosis. The poison is absorbed rather slowly from the stomach, so that if the stomach is evacuated, even some time after the drug has been taken, it will often prevent a fatal termination

Seminal Vesiculitis: Its Treatment

Dr. William M. Spitzer, Denver: Seminal vesiculitis may cause all the symptoms of a cystitis with its resultant miseries. It may result in an abscess with high temperature, prolonged prostration, and eventually death, simulating typhoid. Peritonitis occasionally, but rarely, ensues from a rupture of such an abscess into the peritoneal cavity. Colic, simulating renal colic, may appear, and the presence of pus in the urine at some time complicates the picture still more. Various ejaculatory disturbances, such as premature ejaculation, bloody ejaculation, painful ejaculation, or abscence of ejaculation at the termination of coitus, exists. Dysuria, pollakiuria, inability to urinate and other urinary disturbances may add to this condition. Various reflex pains, such as suprapubic, perineal, rectal, lumbosacral, sciatic, intra-abdominal (simulating appendicitis) and lumbar pains (simulating renal lesions) are common.

With the vesicle as a focus of infection, any condition may arise. Very common are various arthritides (gonorrheal), myocarditis, iritis and even choroiditis; and infections in any of the organs may ensue.

The following symptoms are more or less classic: 1. Pain; an infected seminal vesicle is always painful or tender to the touch. 2. Induration of the walls of the seminal vesicle. 3. The bringing forth of large, ribbon-shaped, vesicular casts on vesicular expression. 4. Sensitiveness or pain in the region of the verumontanum, which is determined by the aid of the olivary bougie.

The treatment should be divided into three parts, namely, the treatment of acute vesiculitis, subacute vesiculitis and chronic vesiculitis. There is a class of cases that demands surgical interference. These are the cases in which the seminal vesicle acts as a focus of infection and serious results threaten to follow, such as gonorrheal arthritis, iritis, serious myocarditis and any other diseased condition threatening the life or life work of the patient. Within the last three years I have opened and drained continuously over a period of two weeks the vesicles in fifteen patients suffering from gonorrheal arthritis. In no case had the arthritis (always polyarticular) existed for less than three months, and in each case everything had been done in the way of local treatment and vaccines that was possible, without any effect on the arthritis. In each case the arthritis was completely stopped within a few days, all joints being restored to normal within two weeks. Metastasis is cured by opening and draining the vesicles.

Current Medical Literature

AMERICAN

Titles marked with an asterisk (*) are abstracted below.

American Journal of Anatomy, Philadelphia

September, 1918, **24**, No. 3

1 Development of Hypophysis Cerebri of Rabbit (Lepus Cuniculus). W. J. Atwell, Ann Arbor, Mich.—p. 271.
2 Morphology of Mammalian Seminiferous Tubule. G. M. Curtis, New York.—p. 339.

American Review of Tuberculosis, Baltimore

September, 1918, **2**, No. 7

3 How United States is Meeting Tuberculosis War Problem. G. E. Bushnell.—p. 387.
4 How Canada is Meeting Tuberculosis War Problem. J. H. Elliott, Toronto.—p. 400.
5 How America is Helping France with Her Tuberculosis Problem. J. A. Miller, New York.—p. 409.
6 Campaign Against Infants Tuberculosis in France by "Oeuvre Grancher." P. Armand-Delille, Paris, France.—p. 435.
7 What Shall Be Done with Tuberculous Soldiers Discovered in Draft, in Cantonments, or Overseas. J. Perkins, Providence, R. I.—p. 449.

American Journal of Medical Sciences, Philadelphia

September, 1918, **156**, No. 3

8 Focal Necrosis of Suprarenal: Acute Suprarenal Insufficiency Analysis of Two Cases. E. Moschcowitz, New York.—p. 313.
9 Side-Lights on Multiple Myeloma. A. W. Meyer and R. E. Swain, San Francisco.—p. 329.
10 *Meningitis in New-Born and in Early Infancy. M. Barron, Minneapolis.—p. 358.
11 Prognosis of Exophthalmic Goiter. E. MacD. Stanton, Schenectady, N. Y.—p. 369.
12 Symptoms of Syphilis of Nervous System. J. Collins, New York. —p. 375.
13 Pudendal Hernia. A. V. Moschcowitz, New York.—p. 395.
14 Studies in Cholelithiasis. Clinical Relationships of Cholesterinemia to Pathologic Process. A. O. Wilensky and M. A. Rothschild, New York.—p. 404.
15 Work of Bureau of Tuberculosis in France—American Red Cross. W. C. White.—p. 415.

10. Meningitis in New-Born and in Infancy.—Barron reviews the literature and cites one case. A male infant, 11 days old, was delivered in breech presentation. During the latter months of the last pregnancy the mother experienced pain in the epigastrium which was of the character of real labor pains during the last two weeks before delivery. She noticed that her abdomen was excessively enlarged. The childbirth, she thinks, was about one month premature. There was a condition of hydramnios during the second stage of labor, more than one gallon of amniotic fluid escaped. The delivery of the head was assisted by the insertion of a finger into the mouth of the fetus and then using a moderate amount of traction. The infant was cyanotic at birth, and it required considerable effort to initiate respiration. The infant had a whimpering cry and at no time nursed well. A slight right-sided paralysis made its appearance on the third day. The right hand appeared puffy and edematous. On the tenth, day there was a bilateral swelling of the eyelids. Several slight convulsions were noticed on the morning of the eleventh day. The lips turned cyanotic. The child died on the same day. At the necropsy it was found that the brain was covered with a layer of brownish fibrinopurulent exudate. This is most marked over the left parietal region. Smears from the exudate show disintegrated pus cells and immense numbers of extracellular and intracellular gram-negative, short, plump bacilli. The organism recovered by culture was definitely the *Bacillus coli-communis.*

Arkansas Medical Society Journal, Little Rock

September, 1918, **15**, No. 4

16 Some Problems Confronting Public Health Service. T. J. Woods, Evening Shade.—p. 63.
17 Mental Health. T. Douglass, Ozark.—p. 67.

Boston Medical and Surgical Journal

Sept. 12, 1918, **179**, No. 11

18 *Suspension and Traction Treatment of Fractures in Base Hospital. G. A. Moore, Brockton.—p. 349.
19 *Use of Turn-Buckle for Traction and Counter-Traction in Treatment of Fractures. F. Holyoke, Holyoke.—p. 362.
20 War Surgery in France. W. I. Clark, Worcester.—p. 365.
21 Empyema and Its Treatment in Military Cantonments During the Winter of 1917-1918. H. Gage, Worcester.—p. 368.
22 Splints for Transportation. K. Emerson, Worcester.—p. 373.
23 Ultraviolet Light for Boils; Case Report. J. Bryant, Boston. —p. 377.

Sept. 26, 1918, **179**, No. 13

24 Mortality from Organic Diseases of Heart Among Wage Earners, 1911-1916. L. I. Dublin, New York.—p. 413.
25 Birth Control. M. D. Ordway, Boston.—p. 421.
26 Hearing Test with Voice to Detect Malingering. J. F. Callahan, Brockton.—p. 423.
27 Treatment of Symptoms and Complications in Tuberculosis. H. F. Gammons, Deerwood, Minn.—p. 425.
28 Tetanus with Incomplete Trismus; Recovery with Serum. R. W. Angevine, Rochester, N. Y.—p. 427.
29 *Nonsurgical Cure of Incompetence of Ileocecal Valve. J. Bryant, Boston.—p. 428.

18. Suspension and Traction Treatment of Fractures in Base Hospital.—The idea of treating fractures by suspension and traction is not a product of the present war, as it was first used over a hundred years ago. The adaptation of this method to fractures of the arm and many improvements on the original method of Hodgen for treating fractures of the leg are the results of the present war. Many of the new ideas in this method have been developed by surgeons of the staff of the American Ambulance Hospital, especially by Major Joseph Blake. The introduction of this method in the present war was for the treatment of badly infected compound fractures. It has proved of inestimable value, from both a subjective and an objective point of view. Subjectively, there is absolute comfort to the patient at all times, as the fragments of bone remain in the same relative position when the patient moves about in bed and when the dressing is done. The pain from congestion of the limb is eliminated owing to the improved circulation. Objectively, the edema of the limp disappears as the limb is higher than the body, and there are no tight bandages about the limb; the wound heals more quickly, due to better circulation. Union of fractures occurs early as a result of immobilizing the fragments, and ankylosis of neighboring joints is avoided by massage and motion during treatment. It requires some training and patience to apply the apparatus properly at the first dressing. It also requires watchfulness on the part of the surgeon to maintain a proper application of the apparatus throughout treatment; but the results more than compensate for the added work.

19. Use of Turn-Buckle for Traction in Treatment of Fractures.—The turn-buckle is a peculiarly unique mechanism where carefully controlled traction and counter-traction has proved necessary under roentgen-ray findings, and Holyoke believes that it will find a very important place in surgery. He describes a case to illustrate the use of the buckle.

29. Nonsurgical Cure of Incompetence of Ileocecal Valve.—Bryant cites a case as proof that an incompetent ileocecal valve may become competent under medical treatment. The treatment he used is not described.

Bulletin of Medical and Chirurgical Faculty of Maryland, Baltimore

May, 1918, **10**, No. 4

30 Responsibilities of Medical Profession in this War. V. Vaughan —p. 54.

Colorado Medicine, Denver

September, 1918, **15**, No. 9

31 Nontuberculous Chest Conditions Diagnosed as Tuberculosis; Unusual Cases of Pulmonary Tuberculosis. J. B. Crouch.—p. 210.
32 Cesarean Section in Toxemia of Pregnancy. L. H. McKinnie, Colorado Springs.—p. 218.
33 Few Difficulties in Administration of Ether. D. E. Hoag, Pueblo. —p. 223.

Georgia Medical Association Journal, Augusta

August, 1918, **8**, No. 4

34 Syphilis vs. Cancer of Stomach. G. M. Niles, Atlanta.—p. 71.
35 Diagnosis and Treatment of Gastric Ulcer. J. T. Rogers, Savannah.—p. 74.
36 The Man with Horns; A Sideshow Fake. A. D. Little, Thomasville.—p. 79.
37 Direct Alcoholization of Sensory Root of Fifth Nerve in Treatment of Tic Douloureux. H. H. Martin, Savannah.—p. 81.
38 Examination of Stools of Children and Its Significance. W. L. Funkhouser, Atlanta.—p. 82.

Journal of Biological Chemistry, Baltimore

September, 1918, 35, No. 3

39 Studies on Pollen and Pollen Disease. Chemical Composition of Ragweed Pollen. J. H. Koessler, Chicago.—p. 415.
40 *Experimental Scurvy of Guinea-Pig in Relation to Diet. B. Cohen and L. B. Mendel, New Haven, Conn.—p. 425.
41 Indicators in Animal Tissues. W. J. Crozier.—p. 455.
42 Significance of Glycollic Acid, Glyoxal, Glycol Aldehyd and Amino-Aldehyd in Intermediary Metabolism. I. Greenwald, New York. —p. 461.
43 Rapid Micromethod for Determination of Phosphate and Total Phosphorus in Urine and Stools. A. Sato, Baltimore.—p. 473.
44 Scurvy of Guinea-Pigs. Experimental Dietary. A. F. Hess and L. J. Unger, New York.—p. 479.
45 *Id. Experiments on Effect of Addition of Fruits and Vegetables to Dietary. A. F. Hess and L. J. Unger, New York.—p. 487.
46 Influence of Electrolytes on Osmotic Pressure of Gelatin Solutions. J. Loeb, New York.—p. 497.
47 Simple Application of Volhard Principle for Blood Plasma Chlorids. W. C. Rappleye, Foxboro, Mass.—p. 509.
48 Determination of Creatinin and Creatin in Blood. W. Denis, Boston.—p. 513.
49 *Fat Soluble Vitamin. H. Steenbock, P. W. Boutwell and H. E. Kent; Madison, Wis.—p. 517.
50 Refractive Index of Blood Serum of Albino Rat at Different Ages. S. Hatai, Vineland, N. J.—p. 527.
51 Carbon Dioxid Combining Power of Blood Plasma in Experimental Tetany. W. S. McCann, Boston.—p. 553.
52 Modified Method for Preparation of Picramic Acid. G. Egerer, Minneapolis.—p. 565.
53 Metabolism of Glycerin Given Intravenously at Constant Rates. J. H. Lewis, Chicago.—p. 567.

40. **Scurvy in Relation to Diet.**—The extended experimental work done by Cohen and Mendel may be summarized as follows: Experimental scurvy of the guinea-pig is demonstrated at will with suitably chosen diets. Exclusive diets of cereal grains like oats and barley produce the disease. Germinated oats or barley prevent the appearance of scurvy even when fed for comparatively long periods. Scurvy arises on a diet of soy bean flour, even when the latter is supplemented with fat soluble and water soluble vitamins, inorganic salts and cellulose. Small additions of raw milk do not prevent the onset of scurvy. Larger quantities cause the symptoms to disappear. Roughage in the diet plays, if anything, a minor accessory rôle in the prevention of scurvy. This disease is not essentially dependent on constipation as a causative factor though the latter may aggravate the symptoms. Cabbage seems to retain some antiscorbutic properties even when dried. Contrary to certain current statements, highly purified lactose, fed with a scurvy producing diet appears to have no effect on the course of the disease.

45. **Effect of Fruits in Dietary in Scurvy.**—Hess and Unger found that orange juice which had been allowed to age for some months in the refrigerator lost some of its antiscorbutic power. This factor may be extracted from orange juice by means of 95 per cent. alcohol, and is entirely absent in the residue. Artificial orange juice prepared according to the formula of McCollum and Pitz failed to protect guinea-pigs from or to cure them of scurvy. It was also found to lack antiscorbutic power in infantile scurvy. Orange peel possesses marked antiscorbutic potency, and withstands desiccation remarkably well, retaining considerable of this power after being dried for three months. Prunes possess practically no value as a preventive against scurvy. Dehydrated vegetables were found to contain little or no antiscorbutic virtue. This experience coincides with that encountered in relation to human scurvy. As this food is of decided nutritive value efforts should be instituted to improve the methods of dehydrating and of storing so as to obviate this deficiency.

49. **Fat Soluble Vitamin.**—Much emphasis has been placed on the superior value of butter fat as compared with other fats used in the human diet, due to the larger content of fat soluble vitamin in the former. The experiments briefly discussed in this paper indicate some of the conditions which may modify and even eliminate all reasons for this distinction. Lard, vegetable fats, and beef fats on the average, as has been shown repeatedly, do not compare favorably with butter fat. The liquid portion of beef fat as first found by Osborne and Mendel and later by Halliburton and Drummond, and also the fats of certain animal organs are richer in the fat soluble vitamin and in some instances may compare very favorably with butter fat. In general, however, oleomargarins on account of the large amounts of the vitamin poor fats used in their manufacture and in spite of the fact that they are churned with milk and contain some butter fat are not to be considered in the same class as good butter in providing the organism with the fat soluble vitamin. Questions of influence of feed, storage conditions, and temperatures used in the renovation of inferior products and even the method of use of the product in the home must be taken into consideration when depending on butter fat as a sole source of fat soluble vitamin in the dietary. With an abundance of a considerable amount of the vegetative parts of plants in the diet the superior value of butter fat over other fats in the human diet is questionable. In the rat as small an amount as 5 per cent. of alfalfa in the ration provides sufficient fat soluble vitamin for normal growth, reproduction, and the rearing of some young. In the absence of such materials in the diet the superior value of butter fat and in fact its necessity for normal nutrition is not to be denied. Then it becomes an important matter to know how this superior quality of butter fat can be obtained and preserved.

Journal of Laboratory and Clinical Medicine, St. Louis

September, 1918, 3, No. 12

54 Recent Aspects of Streptococcus Infection. F. P. Gay.—p. 721.
55 *Study of Leukocytes in an Epidemic of Influenza. R. P. Forbes and H. A. Snyder.—p. 758.
56 Introductory Exercises in Experimental Pathology. W. H. Manwaring, Stanford University, Calif.—p. 761.

55. **Leukocytes in Influenza.**—During April, 1918, a highly contagious, but comparatively mild infection of the respiratory tract was epidemic at Camp Hancock. Several thousand men in the command were infected, but relatively few were ill enough to be sent to the base hospital. The only fatal case occurred early in the epidemic. A blood culture made on the second day of the disease showed in twenty-four hours a heavy growth of small nonmotile, gram-negative, bacilli—*B. influenzae*. *B. influenzae* was recovered from cultures taken from the lung and spleen. Early in the epidemic, Forbes says, it was noted that leukopenia or at least absence of hyperleukocytosis, was a constant factor, and the leukocyte count was frequently of aid in differential diagnosis. However, the clinical picture of the disease usually made diagnosis easy: Nearly every patient gave as the initial symptoms backache, headache and slight cough or sore throat. Conjunctivitis and a marked injection of the soft palate was noted in 90 per cent. of the cases. In addition, a slight or moderate general adenopathy was often noted. The face was flushed and in a few cases the skin of the thorax presented a mild erythema. In three cases a provisional diagnosis of scarlet fever was made until the blood count showed a leukopenia.

Laryngoscope, St. Louis

September, 1918, 28, No. 9

57 Treatment of Stenosis of Larynx and Trachea Following Diphtheria. H. L. Lynah, New York.—p. 629.
58 Tests for Malingering in Defective Hearing. P. D. Kerrison, New York.—p. 662.
59 Problem of Stammering and Its Solution. E. L. Kenyon, Chicago.—p. 666.
60 Report of Cases, Mostly Traumatic, of Serious Damage to Nose and Accessory Sinuses, Operated on Externally with Excellent Cosmetic Results. J. R. Winslow, Baltimore.—p. 679.
61 Recurrent Teratomatous Growth of Trachea. W. Freudenthal, New York.—p. 690.
62 Case of Meningitis Treated by Labyrinthectomy and Decompression. C. E. Perkins, New York.—p. 695.
63 Diseases and Deformities of Nose vs. Neuralgia of Head. F. Stauffer, Salt Lake City.—p. 698.
64 Conservatism in Radical Surgery of Nose and Throat. J. W. Wright, Indianapolis.—p. 705.

Medical Record, New York

Sept. 28, 1918, 94, No. 13

65 An Appeal to Physicians in Behalf of Fourth Liberty Loan. J. J. Kindred, Astoria, L. I.—529.
66 Cancer; Its Causation and Prevention. J. W. Shannon, San Diego, Calif.—p. 530.
67 Perils from Faulty Postures. J. M. Taylor, Philadelphia.—p. 540
68 Resistance and Transference in Psychanalysis. C. P. Oberndorf, New York.—p. 542.
69 Why Iodin? What Iodin? D. H. Stewart, New York.—p. 546.
70 The Terror that Comes in the Night. E. F. Bowers, New York. —p. 547.

Military Surgeon, Washington, D. C.

September, 1918, **43**, No. 3

71 *Communicable Diseases in National Guard and National Army of United States During Six Months from Sept. 29, 1917, to March 29, 1918. V. C. Vaughan and G. T. Palmer.—p. 251. To be concluded.
72 History of Base Hospital, Camp Sherman, Chillicothe, Ohio.—C. A. Wood.—p. 296.
73 *Treatment of Infections and Infected Wounds with Dichloramin-T. W. E. Lee and W. H. Furness.—p. 312.

71. See The Journal, Oct. 12, p. 1248, No. 42.

73. **Treatment of Infections and Infected Wounds with Dichloramin-T.**—At present records have been obtained by the authors from 19,040 completed cases in civil surgical practice which have been treated with dichloramin-T during the last fifteen months. These patients have been treated in the Pennsylvania, the University of Pennsylvania, Germantown, Children's and Bryn Mawr hospitals and the accident services of the Midvale Steel Works and the Remington Arms Company. After these fifteen months' investigation they feel that the use of dichloramin-T has definitely improved the results they have obtained in the primary closure of traumatic wounds of the soft tissues, bones and joints. In the treatment of superficial accessible infections dichloramin-T has uniformly given them better results than any other germicide they have employed, and that the method of its application is simpler and the dressings more economical than with any of the other chlorin agents.

The best results with dichloramin-T can only be obtained when actual chemical contact of the germicide with the infecting organism is maintained. To maintain such contact in superficial surgical infections is a simple matter, and in the first few months of the work a satisfactory technic for this class of wounds was developed. In deep and inaccessible infections the problem is more difficult, and the greater part of the fifteen months has been devoted to this aspect. The confidence in the germicidal value of dichloramin-T has so developed that when it does not control infection the authors feel that the chemical contact has not been maintained, the mass of the germicide employed has not been sufficient, or adequate surgical treatment has not been given.

The striking detoxicating effect of the chlorin group of agents which has become common knowledge through the general use of neutral solution of chlorinated soda is just as satisfactory exhibited with dichloramin-T. Dichloramin, unlike the aqueous hypochlorite solution, has no effect on the knots of catgut ligatures and no disintegrating effect on the catgut itself. The occurrence of secondary hemorrhages in wounds treated by the Carrel method was not uncommon in their experience at the American Ambulance. Major Sweet reports that, in his 1,200 cases of major infected military wounds, there was not one secondary hemorrhage.

The authors say that too great stress cannot be laid on the value of dichloramin as a deodorant dressing. The absence of the usual disagreeable odors in their wards, containing cases with fecal fistulas, is a general observation. During the last two months it has been used routinely in the wards of the Oncological Hospital in Philadelphia. Where formerly these putrid, sloughing, malignant tissues were irrigated every two hours with all kinds of solutions, with indifferent success in the control of infection and with a persistence of the offensive odor, now they are packed lightly every six hours with gauze saturated with a 5 per cent. solution of dichloramin-T. Dr. Gordon Saxon reports that not only has the odor disappeared entirely, but the wound infections have been controlled.

New Jersey Medical Society Journal, Orange

September, 1918, **15**, No. 9

74 Involuntary Nervous System and Organ Therapy. J. Rogers, New York.—p. 297.
75 Duty of Family Physician to Patient Suffering from Headache and Eye Strain. L. Emerson, Orange.—p. 303.
76 Acidosis in Infants. J. Levy, Newark.—p. 309.

New York Medical Journal

Sept. 28, 1918, **108**, No. 13

77 Civilization and Liberty Loan. G. D. Stewart, New York.—p. 533.
78 Mecca of Medicine for Future. F. Tilney, New York.—p. 534.
79 General Diagnostic Study by Internist. L. F. Barker, Baltimore.—p. 538. To be continued.
80 Sex Hygiene. G. W. Franklin, Albany.—p. 542.
81 Syphilis of the Stomach. A. F. R. Andresen, Brooklyn.—p. 544.
82 Dietetic Treatment of Intestinal Stasis. J. W. Weinstein, New York.—p. 547.
83 Congenital Dislocation of Hip in Three Generations. S. A. Jahss, New York.—p. 550.

South Carolina Medical Association Journal, Greenville

August, 1918, **14**, No. 7

84 Middle Ear and Mastoid Infection in Children. J. W. Jervey, Greenville.—p. 202.
85 Tonsillectomy with Local Anesthesia. P. V. Mikell, Columbia.—p. 206.

Southwest Journal of Medicine and Surgery, El Reno, Okla.

September, 1918, **26**, No. 9

86 Therapy of Pellagra. G. M. Niles, Atlanta, Ga.—p. 193.
87 Goiter. C. R. Phelps, Oklahoma City.—p. 202.

Vermont Medicine, Rutland

August, 1918, **3**, No. 8

88 American Association of Independent Physicians. A. S. M. Chisholm, Bennington.—p. 191.
89 Health Inspection in Public Schools. C. S. Caverly, Rutland.—p. 193.

War Medicine, Paris

August, 1918, **2**, No. 1

90 *Wounds of Chest. P. B. Soltau.—p. 1.
91 Early Operative Treatment in Chest Surgery. A. L. Lockwood.—p. 6.
92 *Gunshot Wounds of Chest as Seen in Hospitals on Lines of Communication. J. R. Bradford.—p. 10.
93 *Secondary Surgical Treatment of Chest Wounds. T. Tuffier.—p. 16.
94 *Operative Results of Early Surgical Treatment of Wounds of Lung. P. Duval and E. Vaucher.—p. 21.
95 *Extraction of Projectiles from Pleura and Diaphragm. E. P. de la Villéon.—p. 24.
96 Nature of Nervousness in Soldiers. F. Kennedy.—p. 26.
97 Outline of American Plans for Dealing with War Neuroses. T. W. Salmon.—p. 34.
98 Psychoneurologic Disturbances Affecting Limbs Observed During the War. G. Roussy.—p. 37.
99 Diagnosis and Treatment of War Psychoneuroses Especially with Reference to Cases of Convulsions and Asthenia. Laignel-Lavastine.—p. 44.
100 Preventive Measures in Relation to War Neuroses in U. S. Army Cantonments in America. H. W. Rhein.—p. 47.

90. **Wounds of Chest.**—According to Soltau the chest wound formed on an average 2.5 per cent. of all casualties admitted to the casualty clearing stations and, on occasions, it had risen to 3.5 per cent. To deal properly with cases in these numbers he considered that the following preparations were necessary in a casualty clearing station: 1. A chest team, consisting of a physician and surgeon, who should work in close collaboration, selecting the right type of case for operation, etc. 2. A ward with fifty beds, of which twenty should be fitted with the Fowler elevating frame. (This would allow for the accommodation and retention of cases admitted during forty-eight hours, on an estimated basis of 1,000 admissions a day, which might be expected in active times.) 3. A skilled nursing staff and trained orderlies; apparatus for giving oxygen, preferably Haldane's; if possible, an operating theater attached; immediate access to a bacteriologic laboratory and a roentgenographic outfit. 4. It is necessary also to have a systematized method of note taking and recording.

The mortality had been calculated from returns made from the greater part of the British front during the fighting in 1917. It was impossible to be certain of the death rate in the regimental aid post, but such deaths were practically all in the fatally wounded. At the field ambulance stations it was 7 per cent. In the casualty clearing stations it was 17.18 per cent., that is, 15.9 per cent. in the ninety-three remaining cases. At the base it was about 6 per cent., that is, 4.6 per cent. in the seventy-seven remaining cases. The total mortality in 100 cases which reached a medical unit was therefore 27.5 per cent.

The causes of death were: (*a*) anatomic, (*b*) septic. (*a*) This class included gross lesions, with profound shock and hemorrhage, the complicating lesions involving abdomen and other areas, the multiple wounds, and deaths from edema of the lung and asphyxia. (*b*) The types of infecting organisms at the base were: gas forming organisms, 48 per cent.; streptococci, 40 per cent., and lung organisms, 12 per cent. The infected cases in the front area showed a similar distribution of organisms. The streptococcic infections were the most fatal. In the field ambulance zone the death rate was due entirely to anatomic causes; in the casualty clearing stations it was due both to anatomic and to septic causes, while at the base it was entirely septic in origin. The septic death rate in the casualty clearing stations area was about 26 per cent. of all deaths. Applying the figures given as to mortality, it will be seen that of every 100 men wounded in the chest, about nine die of sepsis.

In the line of treatment, the following points required attention: cleanliness; the combating of shock by careful warming, taking care not to overdo the "réchauffement"; the relief of pain by morphin or one of its derivatives, and by placing the patient in the position which he himself finds most comfortable. The necessity of closing an open wound is mentioned. This is best done by suture, and, in cases in which this is impossible, by most careful plugging. The case should be evacuated to a casualty clearing station as soon as the primary shock is overcome, usually in about three or four hours.

At the casualty clearing station the first essential is to secure rest. Early examination should be confined to determining that there is neither bleeding nor a sucking wound. More detailed examination may follow in a few hours, when an exact diagnosis as to the conditions present, coupled with roentgen-ray localization of foreign bodies, etc., should be made. Sepsis must be continually watched for, both by needling and by observing the constitutional signs. The large hemothorax needs aspiration, which is best done about forty-eight to seventy-two hours after wounding. As regards surgery, the following types of wound might be taken as needing operation: the large open wound or the "stove-in" chest, requiring plastic repair, and closure; the large retained foreign body, when accurately localized; the infected chest, which could be treated either by cleansing and closure or by drainage.

When to evacuate is a constant problem especially in times of active fighting. In quiet times it is better to evacuate the straightforward cases either at the end of three days or else after ten days. The intervening period is the time when sepsis usually appears, and it is better not to let patients travel during that period. In rush times, all wounds unaccompanied by extensive parietal injury, in which the hemothorax is not excessive, may be evacuated within twenty-four hours, provided the primary shock is overcome. After operation, patients should be retained for at least ten days. The open or draining chests travel badly. Patients should not be evacuated within twenty-four hours of aspiration. Soltau says that it is better to hold all patients until convalescent, but the ideal was rarely attainable, and it is often absolutely essential to evacuate early. He emphasizes that surgical treatment concerns only a small portion of the cases, that in these the highest skill is necessary, and that for the remainder the painstaking care of a skilled physician is needed.

92. **Treatment of Gunshot Wounds of Chest in Hospitals on Lines of Communication.**—The main problem in the treatment of these cases, Bradford says, is that of forming an accurate diagnosis: first, as to the exact anatomic condition present; and second, as to the presence or absence of infection. For the adequate treatment of these cases it is essential that these patients should be placed in special wards under the care of a physician and a surgeon working together in close cooperation. If the hemothorax is sterile and small in amount no special treatment is required. Aspiration should be employed in all cases of moderate or large size. The fluid should be removed slowly. The oxygen replacement method is of great value, inasmuch as by this means all the bloody effusion can be removed at one sitting with the minimum discomfort to the patient, provided local anesthesia is employed. In the exceptional cases where clotting en masse has occurred the chest should be opened and the clot removed, the chest being then closed and subsequently aspiration practiced if necessary. In cases of infected hemothorax there should be no delay in the treatment of the patient by surgical methods, such as drainage of the pleura or preferably by cleansing the pleura after the excision of a long length of rib with immediate closure of the chest and subsequent repeated aspiration. The only class of case that admits of delay is that in which the patient presents no symptoms and yet the pleural fluid contains organisms. Some of these patients undoubtedly get well if only treated with aspiration, but in many of these the patient's condition is not really satisfactory, the fluid reaccumulates and it is questionable whether it is not better to treat such patients by opening and cleansing the pleura with immediate closure.

93. **Surgical Treatment of Chest Wounds.**—Tuffier believes that the surgical operations necessitated by the complications which follow wounds of the chest are relatively few. He divides them into two classes: Aseptic complications, which include foreign bodies, hemothorax, pulmonary sclerosis, and ultimately pulmonary tuberculosis; and infections complications, which are constituted by purulent pleurisy, abscess and gangrene of the lungs. He states that foreign bodies should be extracted, after the usual process of localization, only when they cause functional troubles which can be definitely traced to their presence. Tuffier and his colleague Depage advocate a method of treating cases of open purulent pleurisy, based on chemical disinfection of the wound followed by closure of the surgical incision, both in medical purulent pleurisy and in posttraumatic surgical suppurations. (*a*) Treatment of pleural suppuration in unopened cavity comprises three steps: pleurotomy, chemical disinfection and closure. (*b*) Treatment of fistular purulent pleurisy: A bacteriologic examination of the discharge is made by swabs taken from three points: (1) the deep part of the cavity; (2) the edges of the fistula; (3) the skin near the wound. The nature of the discharge being thus established, the treatment is instituted. It comprises three steps, as in the procedure previously described: (1) Débridement and incision of the pleural adhesions; (2) chemical disinfection; (3) closure. When three successive swabs, taken from the depths of the wound, from the edges, and from the neighboring skin, remain negative, the wound is sutured.

94. **Results of Early Surgical Treatment of Lung Wounds.**—For the last two years Duval has treated the wounds of the lungs presenting serious immediate accidents, external or internal bleeding, and opened thorax, by immediate surgical operation on the wound of the lung. For the past year and a half he has operated systematically without compulsion of urgency on certain wounds of the chest to remove the foreign bodies (missile, splinters), to clean surgically the wound of the lung (excision, sweeping suture), to clean the pleura and to treat the wound of the chest wall. Without any immediate surgical treatment the total mortality of chest wounds reaches 30 per cent., not including the soldiers who die in the midposts of the regiments. Through and through wounds, 21.2 per cent.; wounds with shell fragment retained, 30.3 per cent.; wounds with opened thorax, 27 per cent.; wounds with closed thorax, 15 per cent. These figures are based on 3,453 cases.

The authors' personal statistics of last year, including all cases from the field ambulance to the evacuation hospital, all the patients who died without having been operated on, those operated on for serious bleeding or opened thorax, those operated on systematically, and those not operated on, are taken from 161 cases among which there were 27 deaths, a mortality of 16.7 per cent. Of these 27 soldiers who died, 13 were not operated on. They died soon after reaching the ambulance in such bad state that nothing could be done to save them; 148 patients could be treated, 14 died, mortality 10.5 per cent. Among these 148 cases, 29 patients were operated on through urgency, either because they were bleeding severely —16 patients, 9 died—or because the thorax was opened—13 patients, 4 died—the mortality among these being 13. The mortality among the patients operated on through urgency was 44.8 per cent. There were 119 cases which probably would have been treated medically in other ambulances. One hundred and two patients were treated medically because there was no indication for operating; 5 developed empyema; one of them healed perfectly; one died of pleural infection—it was the only death among the 102 cases; the 17 remaining patients who presented no urgent indication for operation but who, according to Duval's personal experience, would probably have developed infection, were nevertheless operated on immediately after reaching the ambulance; the indications for operating being given either by the size of the missile or the injury of the chest wall, fracture of ribs or of scapula, or the importance of the hematoma in the lung. This prophylactic operation consists in: removal of the foreign body; direct treatment of the wound of the lung; bleeding of the pleural cavity; careful excision of the wound of the chest wall. Duval's opinion is that infections are due to the fact that the wound of the lung had not been thoroughly treated, incomplete excision, bits of clothing, or splinters remaining in the wound or in the pleura, and the missile not removed.

95. **Extraction of Projectiles from Pleura and Diaphragm.**—Villéon has abandoned the classic method of thoracotomy in extracting projectiles in the pleura for the simpler method by means of forceps of his own design manipulated under a radioscopic screen and inserted through a small incision. The results thus obtained have been uniformly excellent with a minimum of surgical disturbance and no pneumothorax.

Wisconsin Medical Journal, Milwaukee

September, 1918, **17**, No. 4

101 Use of Precise Methods in Medicine. H. P. Greeley, Madison.—p. 131.
102 Relationship of Temperament to Psychoses. A. W. Rogers, Oconomowoc.—p. 136.
103 Submucous Resection of Nasal Septum. C. G. Dwight, Madison.—p. 139.
104 Seminal Vesicleography. H. J. Millstone, Chicago.—p. 146.

FOREIGN

Titles marked with an asterisk (*) are abstracted below. Single case reports and trials of new drugs are usually omitted.

Archives of Radiology and Electrotherapy, London

August, 1918, **23**, No. 3

1 Universal Roentgen Ray Apparatus of Great Utility. E. C. B. di Castelvecchio.—p. 73.
2 Case of Fracture of Sesamoid Bones. F. S. Scales.—p. 83.
3 Germicidal Action of Ultraviolet Radiation and Its Correlation with Selective Absorption. C. H. Browning and S. Russ.—p. 85.
4 Roentgen Rays and Electricity in Exophthalmic Goiter, and other Disorders of Ductless Glands. F. Hernaman-Johnson.—p. 91.
5 Exposure of Photographic Plates Varies with Milliamperage and Hardness of Tube. E. H. Nelthorpe.—p. 99.

British Medical Journal, London

Sept. 7, 1918, **2**, No. 3010

6 *Etiology and Treatment of Seborrheic Eruptions. H. W. Barber and H. C. Semon.—p. 245.
7 *Ten Thousand Recruits with Doubtful Heart Conditions. S. R. Wells.—p. 248.
8 Reactivity of the Blood. Relation to Cardiac Breathlessness, Surgical Shock and Allied Conditions of the Nervous and Circulatory Systems. B. Moore.—p. 251.
9 Treatment of Epilepsy by Collosol Palladium. A. C. King-Turner.—p. 255.
10 Medical Education in England. Overloaded Curriculum and Incubus of Examination System. E. H. Starling.—p. 258.
11 Education Act and Medical Profession. H. B. Brackenbury.—p. 259.

6. **Treatment of Seborrheic Eruptions.**—After studying the effect of giving alkalis in some 300 cases with seborrheic manifestations Barber and Semon have satisfied themselves that their action may be described as specific. It is not contended, however, that administration of alkalis abolishes the necessity for local applications, but it is claimed that this method of treatment hastens in remarkable fashion the clearing of the various eruptions dependent on the seborrheic state, and, provided that the patient be then given an adequate quantity of alkaline salt per diem, relapses will not occur. The best local applications are oily alkaline suspensions of calamine—for example:

℞	Calamine praep	2
	Aqua calcis	8
	Ol. arachis. vel ol. olivae	ad. 30

Most seborrheic lesions are amenable to this application, which should be renewed not less than twice daily, on lint. When oil is difficult to obtain in sufficient quantity, sodium bicarbonate in 2 per cent. solution in water is very useful. It must be applied thrice daily at least, as a soak on lint under jaconet, and should be changed once during the night if the lesions are very acute. At a later stage when erythema and congestion with irritability of the skin surface persist, the part should be covered with lint or linen smeared with Lassar's paste. All hairy parts, with the exception of the eyebrows and lashes, should be close cropped or shaved.

7. **Recruits with Doubtful Heart Conditions.**—Wells endeavored to determine the incidence in 10,000 cases of various diseases which have been supposed to lead to damage of the cardiac valves or myocardium. A history of rheumatic fever was obtained in 19.2 per cent.; chorea, 2.6 per cent.; rheumatism, 16.1 per cent.; growing pains, 26.5 per cent.; tonsillitis, 22.1 per cent.; scarlet fever, 21.8 per cent.; diphtheria, 7.2 per cent.; pneumonia, 5.3 per cent.; influenza, 56.0 per cent.; syphilis, 2.0 per cent.; gonorrhea, 5.95 per cent., and strain, 27.1 per cent.

Indian Medical Gazette, Calcutta

August, 1918, **53**, No. 8

12 Plague and Rat Destruction. F. N. White.—p. 281.
13 Rat Killing Operations in Mahableshwar. A. V. Gokhale.—p. 288.
14 Plague Inoculation. C. J. Ghia.—p. 290.
15 Antimalarial Measures in Relation to Human Carrier. W. B. Orme.—p. 293.
16 Cases of Surgical Interest. F. P. Connor.—p. 297.
17 Cerebrospinal Fever at Gaya. R. H. Pulipaka.—p. 298.
18 Case of Postoperative Tetanus. K. Prasad.—p. 299.
19 Case of Ectopic Gestation Burst into Rectum (Four to Five Months). T. C. Chatterjee.—p. 300.

Journal of Pathology and Bacteriology, Cambridge

July, 1917, **21**, No. 3

20 Formation of Bone in Calcified Epithelioma of Skin. G. W. Nicholson.—p. 287.
21 Serologic Classification of Bile Soluble Diplococci. W. Mair.—p. 305.
22 Investigation of Strains of Tubercle Bacilli from Animal Tuberculosis. A. S. Griffith.—p. 329.
23 *Cultural Reactions of Certain Anaerobes Found in Wounds. H. Henry.—p. 344.
24 Biochemistry of Pathogenic Anaerobes. B. Welchii and B. Sporogenes (Metchnikoff). C. G. L. Wolf and J. E. G. Harris.—p. 386.

October, 1917, **21**, No. 4

25 *Experimental Observations on Perforating Wounds of Abdominal Viscera. H. Drummond and J. Fraser.—p. 457.
26 *Gas Gangrene of Muscle; Its Morbid Anatomy and Histology. E. Emrys-Roberts and E. M. Cowell.—p. 473.
27 Preparation of Dry Museum Specimens of Bone for War Office Collection. G. Richardson.—p. 491.
28 *Transplantation of Fatty Tissue into Spleen. Y. Matsuoka.—p. 493.
29 *Effect of Infection with Staphylococci, Streptococci and Tubercle Bacilli on Bone Marrow Transplanted into Spleen. Y. Matsuoka.—p. 501.
30 *Rapid Method for Differentiation of Ameboid Forms of Endameba Histolytica from those of Endameba Coli. D. W. Cutler and R. Williamson.—p. 511.

23. **Cultural Reactions of Anaerobes.**—The conditions of modern warfare are such that the soiling of a wound by earth or by clothing infected with fecal organisms is unavoidable. Further, the short range bullet and the shell fragment bring about a destruction of tissue which gives just those conditions that are most favorable for anaerobic growth. These two factors in combination result in the implantation of anaerobes into a focus of dead tissue and so reproduce in the living body a condition which in certain respects is comparable to an artificial culture.

In estimating the extent of the initial trauma, Henry says, one has to take into consideration, not only the amount of tissue in the wound which is directly destroyed by the missile, but also the amount of tissue in the vicinity and confines of the wound which is damaged through interference of its blood supply either by laceration of its vessels or by the pressure from hemorrhage. It is this extra destruction which makes the wound produced by the modern missile so much more formidable than that produced by the long range bullet of the South African War. Quite apart from the destruction produced by the missile in the wound itself, the early growth of the saccharolytic anaerobes initiates a spreading devitalization process in the surrounding tissues, a process in which gas formation, edema and the appearance of autolytic enzymes all figure as causative factors.

This early period is followed by a second phase which is characterized by the development of the more slowly growing proteolytic organisms. The gas formed in the proteolytic stage of wound infection contains sulphuretted hydrogen and certain volatile bodies, and it is these which give rise to the heavy penetrating fetid odor which is such a striking clinical feature of anaerobe infected wounds. The blackening which develops under artificial conditions in meat cultures, and which indicates the formation of a sulphid of iron, is likewise to be found in wounds.

The third phase in anaerobic infection consists in the development of a toxemia, the exact nature of which is as yet undetermined. The clinical picture produced is chiefly that of a rapidly increasing circulatory failure in which death may result so abruptly as to give the impression that it has been caused by pulmonary embolism. But not a single example of the latter condition has been met in a series of over 600 necropsies on men dying from gunshot wounds. This state of rapid circulatory failure has none of the clinical features that are usually associated with acidosis, nor is there any clear laboratory evidence that the local production of acid in and about an infected wound may alter the general reaction of the circulating blood and so cause an acid intoxication of the person. Therefore, the toxemia is believed to be caused by the absorption of some degradation product of protein rather than of carbohydrate, and that it is a toxic protein derivative rather than acid which brings about the abrupt shocklike collapse of the circulation.

The last stage of anaerobic growth is that of successful bacterial invasion of the blood stream. In the majority of cases this inroad occurs just at, or immediately preceding, the death of the person.

25. **Perforating Wounds of Abdominal Viscera.**—Certain facts regarding penetrating wounds of the abdomen on which the clinical evidence is at present somewhat obscure were worked out experimentally by Drummond and Fraser. The first question considered was that of, to what extent can perforating wounds of the intestine recover without operation? The authors used hares, cats and dogs in this work. They found that bullet wounds of the intestine can be very closely simulated by cutting the intestine wall with small sharp scissors. Single artificially made wounds of small size recover, irrespective of the portion of the intestinal tract in which they may occur. Multiple small experimental wounds occasionally undergo spontaneous recovery, but, if too numerous, are fatal.

The second question considered was: If perforation of the intestinal tract occurs, is there any one portion of the intestine that has a greater tendency to spontaneous cure than another? It was found that wounds of the ileum show a greater tendency to spontaneous recovery than any other part of the intestinal tract. In the absence of omentum, spontaneous closure of intestinal wounds occurs by adhesion of neighboring coils of intestine with a plastic peritonitis. Spontaneous closure is hastened when omentum is brought into contact with the injured part. The omentum is at first widely adherent over the injured part. At the end of three days the points of adhesion are limited to the actual intestine perforation. At the end of seven days a vascular anastomosis has occurred between omentum and intestine wall. Mucous membrane at the point of injury remains prolapsed for about a week, in this was to some extent blocking up the aperture. It is eventually replaced by a plug of fibrin. At the site of perforation there tends eventually to be a small sacculation of the mucous coat through the unsupported gap in the muscular tissue. Large areas of stomach wall can be replaced by omental tissue, but restoration of the stomach epithelium does not appear to occur.

26. **Gas Gangrene of Muscle.**—As the result of studying a large number of cases of gas gangrene, Emrys-Roberts and Cowell recognize three main clinical types: *A*. The common type which occurs in wounded lying out twelve to twenty-four hours, or which develops a few hours after the first operation. *B*. The fulminating type where the patient, if untreated, may be dead in a few hours. *C*. The delayed type with a slow onset, so that the condition only becomes established several days, or even weeks, after the date of wounds. In the established cases, the clinical picture is so striking, with the pungent smell, color changes of dead muscle, and grave constitutional symptoms, that the diagnosis never remains long in doubt. It is in the earliest stages of the common type that the importance of immediate diagnosis lies. Here, if attention is paid to the local physical signs found in the wound, a diagnosis can be made before general symptoms have had time to develop. There are two types of wound of muscle in which gas gangrene is especially liable to develop. First, in deep penetrating wounds, with or without fracture of the bone, in which the main vessels may or may not be involved; and, second, an extensive surface wound, where gross laceration of the muscles has been produced, and where large amounts of infective material, such as dirt and fragments of clothing, have been carried in. The authors describe, in detail, the macroscopic and microscopic appearances of the infected muscle at different levels.

The belief is held that gas gangrene of muscle is essentially a manifestation of anaerobic infection. Extensive trauma is an important etiologic factor, as is also the symptom complex of shock, hemorrhage, and exhaustion. The toxins evolved by the growth of the anaerobes contain a myolytic substance—an acid, and, possibly also, deleterious disintegration products; in addition, they possess antichemiotactic properties toward leukocytes. The lytic changes in individual fibers are traced through the following stages during the process of advance: Blurring and eventual loss of cross striations, exaggeration of longitudinal striae, swelling of the fiber, changes in staining properties, and the formation of fluid containing perifibrillar spaces, in which are suspended the toxins and bacilli; fragmentation of the fiber, with marked lysis (which may proceed to complete disintegration); and, finally, phagocytosis by the leukocytes at and near the wound surface. Lytic changes also take place in the muscle fibers of blood vessels, though these are comparatively late phenomena. The capillaries owing to their lack of muscle constituents escape, and, as the result of free anastomoses, the blood supply is generally maintained, and diapedesis of leukocytes provided for. The formation of a fibrinous leukocytic layer at the wound surface is characteristic. The greater the number of leukocytes present, the greater the degree of neutralization of the toxins, and vice versa. The presence of this layer is associated with the absence of pus.

In cases in which the stage of recovery and arrest of the process is reached, the fibrinous leukocytic layer assumes the character of a white line of demarcation, separating dead muscle on the one hand from living muscle on the other. Subsequently this layer is cast off in the form of sloughs, and true granulation tissue takes its place. During the stage of arrest of the process the lytic changes are so abbreviated or compressed in the case of individual fibers, that the change from living striated fiber to the last stage of lysis and phagocytosis is abrupt. The production of gas is always a late phenomenon, except in the fulminating type of case. Its action is purely mechanical, and may lead to ischemia by compression within fascial sheaths, thus assisting and hastening the infective process. Although anaerobic bacilli can be demonstrated in apparently normal muscle well ahead of the process of gas gangrene, they do not assume a pathologic rôle, except when, in case of very grave infection, they are associated in the process of a bacteremia and may give rise to secondary foci. Vascular changes, apart from the effects of trauma, are absent in the advancing edge of the gas gangrene process. Regeneration of muscle fiber is extremely improbable.

28. **Fatty Tissue Transplantation Into Spleen.**—Experimental work was done by Matsuoka to ascertain whether there is any difference in the fat of transplanted fat-cells from the bone marrow and from lobulated fatty tissue proper, that is, from so-called primitive fat organs. With this end in view he autoplastically transplanted fat from the peritoneum and from the cervical region into the spleen. Autoplasty of lobulated fatty tissue from the peritoneum into the spleen was

always successful. Various regenerative processes appear in the fat-cells as early as three days after transplantation. Healing over of the transplanted fatty tissue is much more rapid than in the case of bone marrow; at the same time all fat-cells of the transplanted tissue are well developed.

Autoplasty of the so-called primitive fat organ into the spleen was also successful. Peritoneal connective tissue transplanted with the fatty tissue is converted into fatty tissue after transplantation into the spleen. Epithelial-like fat-cells of the so-called primitive fat organs are converted into common signet-ring shaped fat-cells after autoplasty into the spleen. After transplantation of fatty tissue into the spleen it is evident that connective tissue cells of the spleen may be changed into fat-cells by heterogeneous regeneration during the healing over of the graft.

From these experiments with fat transplantation it is apparent that fat cells of any kind may originate by indirect metaplasia of connective tissue cells, and that there is no conclusive evidence of the presence of so-called *sui generis* fat-cells.

29. **Action of Micro-Organisms on Transplanted Bone Marrow.**—Matsuoka infected rabbits with tubercle bacilli in order to cause chronic irritation of the bone marrow. In two cases which were examined eighty-nine and 112 days respectively after the subcutaneous injection of tubercle bacillus emulsion, the mesenteric glands showed necrosis and secondary fibrous induration. Disseminated, miliary, and also conglomerated tubercles and tuberculous pneumonia were present in the lungs. The spleen exhibited miliary, partly caseated tubercles, consisting mainly of epithelial cells. There was thus a general widespread tuberculosis partly brought about by hematogenous infection. The transplanted bone marrow in the spleen consisted principally of well developed fatty marrow, in a small part of which islets of marrow cells were to be seen between the fat cells. In another part, however, the bone marrow was diffusely cellular with uniform hyperplasia of the various medullary cells. The bone marrow in the femur had the same appearance as the transplanted bone marrow in the spleen.

The animals were dissected 185 and 190 days after transplantation, at which times, after simple autoplasty into the spleen, no evidence of myeloid deposits of the spleen substance is present. Tuberculous infection did not result in the appearance of myeloid cells. It is evident from these observations that even with such slight general functional irritations, as occurs in tuberculous infection, bone marrow transplanted autoplastically into the spleen in moderate amounts has the same reaction as the remaining untransplanted bone marrow. This view is also in accordance with the biologic healing up of the graft in the spleen.

30. **Differentiating Between Endameba Histolytica and Endameba Coli.**—With the intention of facilitating the rapid recognition of the ameboid form of the parasite, Cutler and Williamson have employed a 1:10,000 solution of neutral red in 0.85 per cent. sodium chlorid solution. A loopful of feces is emulsified in a drop of the neutral red solution on a glass slide. The preparation is covered with a coverslip and examined with one-sixth inch objective and No. 10 eyepiece. A warm stage is an advantage, but is not essential. In such a preparation the vegetative form of *E. histolytica* takes up the neutral red, and the stained amebas can readily be seen and recognized. The pink dye is uniformly distributed throughout the endoplasm, while the ectoplasm remains unstained. *Endameba coli* is not stained and appears as a light gray body. The method forms an easy and satisfactory means of differentiation between the two micro-organisms.

Journal of State Medicine, London

September, 1918, **26**, No. 9

31 Women Workers and Health of Nation. A. M. Anderson.—p. 257.
32 Reform of Treatment of Mental Disorders. G. E. Smith.—p. 267.
33 What Steps Can Be Taken to Improve Teeth of Nation? J. G. Turner.—p. 269.

Lancet, London

Sept. 7, 1918, **2**, No. 4958

34 Employment of Pregnant Women in Munition Factories. M. A. S. Deacon.—p. 311.
35 *Methods of Control of Fragments in Gunshot Wounds of Jaws. H. P. Pickerill.—p. 313.
36 Hemoglobinuria (Blackwater Fever). L. G. Parsons and J. G. Forbes.—317.
37 *Susceptibility of Antiscorbutic Principle to Alkalinity. A. Harden and S. S. Zilva.—p. 320.
38 *Prognosis in Trench Nephritis. S. C. Dyke.—p. 320.
39 Obscure Epidemic Encephalitis. S. K. Vaidya.—p. 322.
40 Influenza and Purulent Bronchitis. A. Maude.—p. 324.
41 Influenza Outbreak. C. W. Wirgman.—p. 324.
42 Successful Use of Intravenous Injections of Antimony Tartar Emetic in Bilharziosis. J. B. Christopherson.—p. 325.
43 Case of Acute Delirious Mania; Recovery. F. Wyatt-Smith.—p. 327.

35. **Controlling Fragments in Gunshot Wounds of Jaws.**—Pickerill maintained that there is, or should be, no best method of controlling fragments. Each case should be treated individually, according to its requirements. Control and not absolute immobilization of the fragments should be the aim of any method of treatment. The utilization of function and perhaps slight mobility of the fragments from as early a time as possible is the best stimulus to union. A conservative line of control should be adopted whenever possible; that is, loose teeth and small fragments should be retained and controlled with function rather than be sacrificed to obtain a quick but inferior result.

37. **Susceptibility of Antiscorbutic Principle to Alkalinity.**—The experiments made by Harden and Zilva show definitely that alkalinity has a very deleterious effect on the antiscorbutic potency of orange juice. Most antiscorbutic vegetables are either neutral or very slightly acid, and any culinary manipulation which entails alkaline treatment, even to a slight degree, will be instrumental in the destruction, if not of the entire, at least of a significant part of the antiscorbutic potency of such vegetables. When orange juice was made twentieth normal alkaline it was found that it did not prevent or delay the onset of scurvy.

38. **Prognosis in Trench Nephritis.**—Evidence presented by Dyke seems to indicate that the condition known as trench nephritis differs little from nephritis as met with in civilian practice except in the greater frequency of its occurrence, and that it is either a primary acute nephritis or an exacerbation of preexisting disease, induced by fatigue and exposure.

Medical Journal of Australia, Sydney

Aug. 10, 1918, **2**, No. 6

44 Malarial Survey of Township of Cairns. A. Breinl and F. H. Taylor.—p. 109.
45 Plea for Adequate Recognition of Part that Can Be Played in Shell Shock by Septic Foci. S. Pern.—p. 115.
46 War Surgery. H. Flecker.—p. 116.

Aug. 17, 1918, **2**, No. 7

47 Treatment of Strabismus. E. T. Smith.—p. 135.

Annales de Médecine, Paris

May-June, 1918, **5**, No. 3

48 *Familial Hypertrophic Neuritis. P. Marie and Bertrand.—p. 209.
49 *Voltaic Nystagmus. L. Bard.—p. 239.
50 *Origin of Albuminuria. P. Merklen.—p. 256.
51 *Sign of Adhesive Mediastinitis. E. Lenoble.—p. 267.
52 *Tuberculous Cavities with Few Bacilli. C. Mantoux.—p. 307.

48. **Familial Hypertrophic Neuritis.**—Marie and Bertrand report with eighteen illustrations some interesting histopathologic findings at necropsy in two cases of familial hypertrophic neuritis.

49. **Electrically Induced Nystagmus.**—Bard discusses the nystagmus and other phenomena induced by placing on the temples the electrodes from a battery. The differences between the phenomena thus induced and those from thermic stimulation of the labyrinth throw light on the mechanism of the nystagmus, etc., under these conditions, as he explains in detail. The results from the two methods usefully supplement each other.

50. **Albuminuria in Soldiers.**—Merklen found complications on the part of the kidneys directly after acute infectious diseases in 17 per cent. of the men examined, irrespective of whether the men had been serving at the front or had never reached the trench line. In six of eighteen men the albuminuria had developed after acute tonsillitis. There was a history of some old acute infectious disease in 40 per cent. of the eighty men from the front and in 50 per cent. of the thirty others. In 22 per cent. there was primary nephritis

occurring in previously healthy men. In two of the men the albuminuria developed after antityphoid vaccination. Merklen's final conclusion is that chronic albuminuria which may be well borne in civilian life is extremely liable to give trouble under the stress of military life, even of limited service.

51. **Signs of Adhesive Pericarditis.**—Lenoble concludes from his study of eight cases of adhesive mediastinitis that there are no pathognomonic signs of it. Operative measures are called for when access to the adhesions is possible. The diagnosis is facilitated whenever certain radiographic fixed shadows show a special intensity. Also by the thickening of the pleura detected on attempting to puncture it, the needle meeting resistance as if from leather or thick cardboard.

52. **Tuberculous Cavities with Few Bacilli.**—The *Annales* has joined the *Lyon Chirurgical* and a number of other French, Italian and Swedish Journals which now are giving a brief abstract in English of each article. The abstract accompanying Mantoux' article is given herewith complete. "There are some chronical cavitarious tuberculous patients far from any evolving push, of which the repeated examination of the spits, even preceded by homogeneisation and centrifugation, is unfit for disclosing the presence of the Koch-bacillus; the only inoculation to the guinea-pig identifies those cavitarious paucibacillarious (with few bacilli) tuberculoses. It is necessary, with every sick suspected of tuberculosis, to have recourse of the triple stethacoustical, bacteriologic and radiologic examination. The three methods are equally indispensable; one corrects the errors of the other; an examination of a tuberculous is incomplete, if it does not rest on this diagnostical tripod."

Archives Médicales Belges, Paris

July, 1918, **71**, No. 7

53 *Spirochete Fetid Bronchitis. P. Nolf and P. Spehl.—p. 1.
54 Chronic Sinusitis. C. Sterckmans.—p. 20.
55 Vision and Fitness for Service. Moret.—p. 47.
56 *Night Blindness in Soldiers. M. Danis.—p. 63.
57 *War Wounds of Chest. R. Lefebvre.—p. 78.

53. **Spirochete Bronchitis.**—Nolf and Spehl have encountered eight cases of bronchitis which resembled Castellani's bronchospirochetosis and also Violle's spirochete bleeding bronchitis but differed from both by the extremely fetid character of breath and sputum. There was a hemorrhagic tendency only in one of the cases. The bronchitis was primary in six of the eight cases, and one of these men died. The onset was stormy, with progressive weakness, dyspnea and cyanosis, and numerous spirochetes in the sputum. The duration of the disease was over a month at least; in the fatal primary case, seventy-three days, and in the two secondary cases, ten days and two months.

56. **Night Blindness in Soldiers.**—Danis reviews the literature on hemeralopia and states that he has encountered it in 7.52 per cent. of 2,700 Belgian soldiers with eye disturbances of various kinds. There seems to be a recrudescence of it in the men on active service. Alcohol is totally proscribed on the Belgian front, and the coffee is made weak, but the men smoke a great deal. No central scotomas were discovered. Probably the hemeralopia in many cases is merely the revealing under army conditions of an old unsuspected tendency to night blindness, but there is no doubt that the physical and emotional stress of the war has sometimes induced essential hemeralopia by some disturbance in the local circulation, rendering the retina unable to adapt itself in the obscurity of the night. These men should be spared night service, but simulation must be guarded against.

57. **Wounds of the Lung.**—Lefebvre's long study of the immediate complications of wounds of the lung concludes by urging immediate suture of the pleura as almost the routine procedure, like a laparotomy for an abdominal wound. Surgical closing of the breach in the wall immobilizes enough to favor hemothorax, and the compression from this may check further hemorrhage. Moving a man wounded in the chest is even more serious for him than with an abdominal wound. If possible, he should be kept for two or three days. Shock in men wounded in the chest simulates grave anemia. Repose and immobilization are the best treatment. If the heart is much displaced, it may be advisable to puncture. It may prove possible to arrest hemorrhage by artificial pneumothorax. The Italians have used this method considerably for war wounds of the chest, and laud the results obtained. It seems logical to get rid of the extravasated blood, liable to set up infection, and replace it with a sterile artificial pneumothorax to keep up the compression. If the hemorrhage persists, thoracotomy and suture of the lung are indicated. With increasing experience this will probably be done earlier to arrest hemorrhage and not be left for the last resource. The immediate advantages of suturing the pleura are so great that the danger from leaving a foreign body in the cavity can be overlooked. Local anesthesia or simply morphin is preferable to general anesthesia. The ribs can be spread apart, to enlarge the opening, resecting the ends of a fractured rib.

Archives de Médecine des Enfants, Paris

September, 1918, **21**, No. 9

58 *Microbic Associations in Meningitis. Condat.—p. 449.
59 Acute Tuberculous Nephritis. L. Petitpierre.—p. 467.
60 *Phlegmon in the Orbit. Condat.—p. 473.
61 Present Status of Acrocephaly. J. Comby.—p. 476.

58. **Mixed Meningitis.**—Condat reviews the experiences with 47 recent cases of meningitis in Comby's service. She has compiled others, bringing the total to 168 cases, with mortality of 31.5 per cent. A number of the patients were young infants who always present an exceptionally high death rate. All but 11 of her 47 cases were meningococcus cases, with 25 per cent. mortality. Treatment was always by intraspinal injection of 15, 20 or 30 c.c. of antimeningococcus serum, according to the age of the child, whenever the lumbar puncture fluid looked turbid. If the meningococcus is found, the injection is repeated the next day and again after forty-eight hours. Two injections answered the purpose in 3 cases; three were required in 12 and four in 6. In 9 cases from five to ten injections were made; in 3 cases a tardy relapse or recurrence compelled a new series of injections. No special precautions were taken against serum sickness and except for an occasional rash or slight arthralgia there were no mishaps from it. She keeps up the serotherapy so long as the fluid is turbid; recovery followed in some cases which had seemed absolutely beyond relief. To start the serotherapy early is more important than the type of meningococcus involved. Everything should be done to simplify it and render it available for every practitioner. Any attempt to mix serums from different strains merely renders the serotherapy more complicated. This should be left to institutions. Even at the best it may delay proper treatment.

60. **Phlegmon in Orbit.**—There had been first a rhinopharyngitis, then ethmoiditis and then the phlegmon in the left orbit. The general condition kept good and the pus broke through spontaneously with complete recovery during the several months to date.

Bulletins de la Société Méd. des Hôpitaux, Paris

May 31, 1918, **42**, No. 19

62 *Tardy Relapses in Meningitis. A. Netter.—p. 527.
63 Parameningococcus Meningitis and Septicemias. Brulé.—p. 537.
64 Subacute Lethargic Encephalitis. P. Sainton.—p. 543.
65 Heart Block. C. Laubry and C. Esmein.—p. 550.
66 Intestinal Bilharziosis. P. Ameuille and G. Magne.—p. 553.
67 *Hemoglobinuria in Malaria. P. Ameuille, M. Sourdel and A. P. Marcorelle.—p. 556; R. Porak.—p. 559.
68 *Intravenous Injection of Hexamethylenamin. Loeper and L. Grosdidier.—p. 566; Loeper and C. Wagner.—p. 569.
69 Periarterial Sympathectomy in Raynaud's Disease. L. Veillet.—p. 571.

62. **Tardy Relapses of Meningitis.**—Netter says that among 350 meningitis patients, 1.14 per cent. had a relapse in from one to nearly three months after apparent recovery. In two infants intercurrent measles probably brought on the relapse. Some of his and others' cases suggest that antityphoid vaccination may produce a reaction in the organism which might favor the proliferation of otherwise harmless meningococci slumbering in the nasopharynx. In certain exceptional cases, the reaction to an antityphoid injection may simulate meningitis. In one case meningitis was soon followed by paratyphoid B and this in turn by meningitis again, with final recovery under serotherapy. Sainton reported syncope after

an intravenous injection of antimeningococcus serum, which required artificial respiration to revive the patient.

67. **Hemoglobinuria in Malaria.**—These two communications describe several cases of malarial *bilieuse hémoglobinurique* and explain the disturbances as the result of a kind of auto-anaphylaxis. This auto-anaphylaxis is of a physical nature, and it is the initial phenomenon of the hemoglobinuric jaundice. The massive destruction of red corpuscles occurs suddenly and rapidly and the blood pressure falls, but the reds that escape display normal resisting powers, and no hemolytic substance can be detected in the serum nor in extracts of various organs. The liver and kidneys were found apparently sound. A small dose of quinin may start the auto-anaphylaxis in those hypersusceptible to it, but it occurs in others in the absence of quinin. The practical conclusion of the articles is that *bilieuse hémoglobinurique* should be treated by anti-anaphylaxis measures such as have proved effectual under other conditions. The blood serum taken during a malarial attack might be used in the anti-anaphylaxis. This might serve to "consolidate the hemolytic complex" as Widal, Abrami and Brissaud have accomplished in paroxysmal *hemoglobinuria a frigore*. One of the patients recovered but two others died, the massive destruction of the red corpuscles having induced extreme anemia with fatal anoxemia. Death occurred more rapidly than is the case from anemia alone.

68. **Intravenous Injections of Hexamethylenamin.**—Loeper and Grosdidier determined the relative harmlessness of hexamethylenamin in injections by the vein in rabbits and then they applied it in typhoid, pneumonia, nephritis and liver disease. The action of the drug by the vein, they say, is infinitely superior to that by subcutaneous injection or by the mouth. It had an unmistakably favorable influence on the temperature, the general condition and on kidney functioning. In fifteen pneumonia cases all were improved and cured; in five the disease was aborted, defervescence occurring the following day. In septic bronchopneumonia the temperature declined more gradually but the general condition improved. Very slight influence was noted in the pleural streptococcus cases and it was inconstant in the secondary streptococcemias. Rabbits bore perfectly injection by the vein of 0.5 gm. per kg. and man seems to bear without harm 1.5 to 2 gm. The dose was 0.25 gm. to 1 c.c. sterilized water, the solution prepared cold, with intermittent sterilization. The volume introduced should not be over 6 or 8 c.c., that is, about 2 gm.

The same treatment was applied in serofibrinous pleurisy with good effects, slow but progressive. The results seemed to be the same when the drug was injected directly into the pleural cavity. In tuberculosis, they say that a series of twenty injections seemed to induce *très réelles améliorations*. One young soldier with nephritis and dropsy, pneumonia and sputum swarming with tubercle bacilli was given 21 gm. of the drug in two series of seven injections, and notable improvement followed. They add that of course this medication is only palliative, but the experiences to date indicate that it acts on the general reactions, the febrile, the toxic and the septic. It is a sedative but without depressing action, and it seems to reduce the intoxication from the infection wherever the infectious process may be located.

Journal de Médecine de Bordeaux

August, 1918, **89**, No. 8

70 *Disturbances in Nails after War Wounds. A. Le Dantec.—p. 215.
71 *Operations for Wounds of Nerves. A. Hesnard.—p. 218.
72 Pseudo-Tuberculosis of Peritoneum. J. Vitrac.—p. 224.
73 Suggestions for Rural Hygiene. Darbouet.—p. 226.

70. **Finger Nail Sign of Irritative Neuritis.**—Le Dantec has frequently noticed as a trophic disturbance in the finger nails after a war wound of the arm, the development of a roll of flesh under the outer end of the nail. This *bourrelet sous-unguéal* is a warning of the presence of some scrap of pro- jectile or gravel in the tissues. The matrix, the bed of the nail and the nail itself all seem to be subject to a manifest process of hyperplasia. Percussion of the nerve its entire length will generally locate the foreign body, the cause of the trouble. This is usually where the nerve is embedded in cicatricial tissue. The percussion induces an intense tingling pain to the tip of the fingers or toes. He has succeeded in releasing the adherent nerve by daily potassium iodid ionization of the spot, the electrodes applied to both sides of the limb, supplemented by massage and exercise to break up gradually the adhesions. In one case he abolished the pain by injecting alcohol (70 per cent.) into the adherent cicatrix. As the cause for the irritative neuritis is removed, the protuberant flesh under the nails disappears with it.

71. **War Wounds of Nerves.**—Hesnard reviews the indications and contraindications for operations on peripheral nerves as determined from the immediate and remote experiences at the Bizerte *centre neuro-psychiatrique* of which he is chief. Good results were seldom obtained when the interval was over four months, and the best outcome was with intervals of from one up to four months. The operation might even be done the very day of the war wound. He thinks that the danger of an aseptic operation near a recent or slightly infected wound may have been exaggerated. He has witnessed again and again the excellent reunion of surgical wounds made for intervention on nerves a few centimeters from a war wound in evolution and previously infected. But such haste is not indispensable, and he advocates operating regardless of the interval when clinical examination shows the absence of complete or very pronounced degeneration of the wounded nerve and the muscles which it innervates. By "degeneration" he does not mean the degeneration response to electric tests. This may be encountered with superficial and curable injuries. Only anatomic neuromuscular degenerescence indicates that the nerve is lost beyond redemption, and this may take eight or ten months; in some cases up to one year or three years. Some stop short of complete degeneration and finally recuperate spontaneously. Suture after the nerve had been completely severed resulted in a cure in two out of fifteen cases, and improvement only in two other cases. Certain nerves recuperate earlier and more completely than others; in this order he lists the radial, the external sciatic, the ulnar, the internal sciatic, the median, and the trunk sciatic nerves.

Journal d'Urologie, Paris

August, 1918, **7**, No. 3

74 *Kidney Stones. Rochet and Boulouneix.—p. 235.
75 *Autoplastic Procedures for Urethra Fistulas. F. Cathelin.—p. 267.
76 *Bilharziasis of Bladder. E. Desnos.—p. 319; Marion.—p. 325.
77 Fragment of Penny Driven into Bladder by Projectile. A. Mendaro.—p. 329.
78 Concretion around Bullet in Woman's Bladder. Removed Ten Years after Wound. S. N. Oeconomos.—p. 333.
79 *Radium Treatment of Cancer of Prostate. G. Marion.—p. 335.
80 *Transactions of Urologic Conference.—p. 337.

74. **Kidney Stones in Soldiers.**—This report from a *centre urologique* states that in the total of thirty-four cases of kidney stones encountered in the course of three years, the kidney was infected in all but five. The remarkable clinical latency of stones in the kidneys as long as the kidney is not infected is shown by many of the cases. The unhygienic conditions at the front predisposing to autointoxication, and the jolting over rough roads, etc., damage kidneys already impaired by the presence of stones, and if an infectious process is set up this first attracts attention to the kidneys. The experiences related teach the importance of radiographing the whole urinary apparatus when there are even vague complaints in respect to the kidneys. Ambard's ureosecretory constant showed a marked turn for the better after removal of the stones.

75. **Fistulas of the Urethra.**—Cathelin devotes nearly fifty pages to analysis of the different war wounds of the external genitals and the best means for repair. His article is accompanied by twenty-seven illustrations, and he emphasizes the necessity in operating always to be ultra conservative, as every minutest scrap of skin is extremely important for the plastic operation later. Even when the penis has been almost completely severed, he has succeeded in getting it to heal in place. He gives minute directions for the various plastic operations and calls attention in particular to his method of curing a fistula by turning in the skin. (It was briefly described with an illustration in The Journal, Aug. 17, 1918, p. 606.) He has applied it in thirteen cases of war fistulas with complete and rapid cure in a few days, the men soon

returning to service. In nine cases of inflammatory fistulas the cure was prompt and complete in seven, but the tissues were too pathologic in the other two cases. This technic is applicable to fistulas anywhere, in the intestine, salivary glands, bladder, etc. He regards it as destined to a future, "a great progress which we owe to the war." This *inversion cutanée avec section bipolaire* is the ideal method, he reiterates, for treating a fistula into the urethra as it does not encroach on the urethra itself at all, and the cure is permanent without ulterior stenosis. He warns that a retention catheter is disastrous after these autoplastic operations. The intermittent use of the catheter answered the purpose in his cases.

76. **Bilharziasis of the Bladder.**—Desnos reports a case in which there have been no further symptoms during the two years since he gave a ten months' course of diathermy treatment. The cystoscopic findings now show clinically normal conditions in the bladder. The application of the high frequency current was somewhat painful, so that he could not cauterize more than ten or twelve of the minute vesicular elevations in the bladder walls at one sitting. The only danger with this treatment is the possibility of hemorrhage as the little eschars drop off in about two days. There was only slight hematuria in his case.

Marion's patient complained only of his right kidney, which proved to be absolutely sound. Fifteen little bleeding elevations were seen in the bladder walls, while the ureter urine was normal on both sides. The patient clamored for an operation on his right kidney but Marion compromised by resecting the little polypous bunches through a suprapubic incision, and cauterized the site of each. At once all symptoms subsided and the cure has been complete to date.

79. **Radium Treatment of Cancer of the Prostate.**—Marion punctures to the prostate with a hydrocele trocar, a little to one side of the median line of the perineum, guided by the finger in the rectum. The radium tube, mounted on a silver wire, is then introduced in place of the trocar. The same procedure is repeated on the other side. In forty-eight hours after withdrawal of the radium tubes the puncture holes are healed and the patient can get up and return to business.

80. **Conference of Army Urologists.**—The men in charge of the French "urologic centers" held a conference recently at Paris. Two questions had been appointed for discussion; the treatment of war wounds of kidney and ureter, and autoplastic procedures for traumatic fistulas of the urethra. The transactions are reported here in full. The leading address on the second subject is summarized in Abstract 75 above.

Presse Médicale, Paris

Aug. 22, 1918, **26**, No. 47

81 *Scarlatinal Endocarditis. Nobécourt.—p. 429.
82 *Malarial Mammitis. H. de Brun.—p. 430.
83 Extraction of Projectiles in Skull. H. Béclère.—p. 431.
84 Sulphur-Oil Injections for Psoriasis. L. Bory.—p. 432.

81. **Scarlatinal Endocarditis.**—According to Nobécourt's experience, scarlatinal endocarditis is more liable to run into a chronic phase in children than in adults. In seven cases in soldiers under 24 the heart sounds returned to normal in from thirty to fifty days in five of the men. Others have reported similar experiences, showing about 28.5 per cent. left with persisting valvular trouble. Tardy tachycardia may occur after scarlet fever with or without the endocarditis. In one soldier acute articular rheumatism developed at the twenty-seventh day of scarlet fever, and mitral endocarditis followed, with pericarditis, pleuritis and phlebitis in left leg. Another had acute articular rheumatism the fifth day of the scarlet fever, mitral endocarditis the seventh, and acute nephritis the thirtieth. Scarlatinal endocarditis is of the simple type. The best testimony to an infectious endocarditis is the existence of severe secondary infections, a tardy infectious syndrome. In conclusion he reiterates that the agent of acute articular rheumatism and the agent of scarlet fever can determine clinically identical affections of the heart.

82. **Malarial Mammitis.**—De Brun has encountered sixteen cases of a characteristic swelling and pain in the mamma on one or both sides in soldiers with a severe form of malaria, or the mammitis may develop as the first manifestation of the malaria. The men button their suspenders farther along on that side, and this "suspenders sign," or the pain from lying on the breast in sleeping may be the first thing to call attention to the malaria. The mammitis persisted for six and for eight months in two of his cases; only exceptionally was it as brief as twelve and fourteen days. No tendency to sclerosis later was detected in any instance. All the men had ordinary tertian malaria. In one the mammitis developed three months after contracting the malaria; in one not until after fourteen months. No action on the mammitis was apparent from quinin, even pushed with 2 gm. a day, and the usual sedatives had little effect in reducing the pain.

Revue de Chirurgie, Paris

Jan.-Feb., 1918, **37**, No. 1-2, Pub'd August

85 *War Wounds of Wrist. V. Combier and J. Murard.—p. 1.
86 *Conservative Treatment of Wounds of Knee. J. Delmas.—p. 49.
87 *Amputation of Thigh. J. Martin.—p. 104.
88 *Rupture into Peritoneum of Echinococcus Cyst. F. Dévé.—p. 125.
89 *Laws Regulating Healing of Skin Wounds. A. Lumière.—p. 168. Conc'n.

85. **War Wounds of Wrist.**—The indications for operation are deduced by Combier and Murard from the ultimate results of their treatment in twenty-seven cases. With a suppurative process, the effects of treatment are not very brilliant. In their four cases of this kind, amputation had to be done later in one, but one of the others has good use of his hand seven months after the total carpectomy. It was done the twenty-eighth day after the seton wound of the left wrist.

86. **Conservative Treatment of Wounds of Knee.**—Delmas is an advocate of extreme conservatism in treatment of wounds of the knee. He says that Willems' method of immediate and active mobilization of the knee (described in these columns on page 1009, abstract 23), has resulted in more rapid and more perfect cures in the cases in which asepsis can be counted on, than with other methods. Otherwise, in simple cases Delmas' practice is a lateral arthrotomy. It is easy then to open up the joint by severing the patellar ligament if the lesion is found extensive.

87. **Amputation of the Thigh.**—Martin discusses the indications, the technic and the results in fifty-three cases. He says it is not a grave operation when done correctly and rapidly under general ethyl chlorid anesthesia. The shock of the wound is the main thing; the operative shock is insignificant in comparison. The prognosis depends on the wound or the gas gangrene compelling the amputation. The latter, he declares, does not aggravate the prognosis, but the amputation cannot cure unless it removes the septic focus entire. Before September, 1915, he had to amputate for septicemia in seventeen cases but since then only in eight cases. The mortality in the first group was 41 and in the second 12.5 per cent. Salvation with a penetrating wound of the knee lies in immediate extensive exploration of the knee and early resection if demanded. A rebellious purulent arthritis calls for amputation when the reactions of the organism demonstrate that the arthritis is getting the upper hand. The application of these principles has brought his mortality from 44.4 per cent. down to zero. When septicemia after a war wound of the leg or thigh shows no signs of yielding to treatment, he bows to the inevitable and amputates in time, and thus has brought the mortality down to zero in this category also.

88. **Rupture of Echinococcus Cyst in Biliary Apparatus.**—Dévé refers to what he calls *choleperitoine hydatique*, that is, a torpid effusion in the abdomen consecutive to the accumulation in the peritoneal cavity of nonvirulent bile escaping from a ruptured echinococcus cyst in the liver. He devotes forty-two pages to the various aspects of this phenomenon and its consequences. The possibility of an echinococcus cyst as the cause of the accumulation of bile in the peritoneal cavity should never be forgotten. He warns that multiple cysts should always be suspected, and the permeability of the biliary passages verified before concluding the operation. When an accumulation of bile in the peritoneum has become encysted, it is dangerous and useless to attempt to remove it. But it is important to destroy any elements liable to start new cysts, and he relies on ether for the purpose, convinced that it has a specific destructive action on the scolex. Copious ether lavage of the peritoneum is thus advisable when a cyst

In another case the man of 30 had ten operations for papillomas in the bladder in the course of nearly six years. The tumors finally recurred in a malignant form. After the tenth operation, roentgen treatment was given through a temporary bladder fistula, and the man has had *no recurrence* during the nine years since to date. Eight twenty-minute exposures were given in the course of eight days. A medium hard tube was used, with a total of 17.5 H units; distance, 22 cm. The exposures were preceded by local anesthesia and morphin. The general practitioner must bear in mind the marked tendency of benign bladder tumors to develop early into cancer, and not waste too much time on symptomatic treatment of hematuria and cystitis. The operation must be extensive and radical, and the patient must be kept under regular control for the first few years so that any recurrence may be detected and removed at once. All bladder tumors seem to possess a potentially malignant character. Only 12 of the 49 patients were women; the youngest was 29, the oldest 80. The immediate postoperative mortality was 45 per cent., but 3 of the 7 cancer patients who survived the operation are still living, nine, seven and six years to date. Of the 20 patients with apparently benign tumors, no less than 9 have died since, all from malignant disease except 2.

Norsk Magazin for Lægevidenskaben, Christiania

August, 1918, **79**, No. 8

126 *Idiopathic Dilatation of Esophagus. F. Harbitz.—p. 841.
127 *Thalamometer. G. Ræder.—p. 862.
128 *Chronic Stenosis in Larynx or Trachea. V. Uchermann.—p. 872.
129 *Syphilis of Internal Organs. K. Nicolaysen.—p. 890.
130 *Aplasia or Dystopia of Kidney. G. Schaanning.—p. 901.
131 *Mechanism of Acute Duodenal Occlusion. S. Høyer.—p. 914.

126. **Idiopathic Dilatation of the Esophagus.**—Harbitz describes the clinical and necropsy findings in three cases of this anomaly which he classes with Hirschsprung's disease and hypertrophy of the pylorus in infants. All three seem to be the result of some congenital abnormality, possibly a tendency to functional atony of the walls, with abnormal conditions in the vagus nerve causing spasmodic contraction of the bowel, pylorus or cardia. The patients in the three cases reported were men of 34, 40 and 27, and they had been having noticeable dilatation of the esophagus for eight, four and seven years.

127. **To Measure Depth of Anterior Chamber.**—Ræder calls the instrument described, with illustrations, the thalamometer.

128. **Operative Treatment for Stenosis in Trachea and Larynx.**—Uchermann reviews the different methods in vogue for treating chronic stenosis in trachea or larynx and expatiates on the unsatisfactory results often obtained with these needlessly extensive and comprehensive operations. All that is necessary is to act on the exact point of the traumatic stenosis, stretch it, and leave the rest of the organ intact. He accomplishes this by introducing a nickeled cylinder on a handle. It is introduced from the cannula opening, just below the stenosis, and does not extend above it. No force is used to introduce it as the stenosis is severed beforehand on the median line. The blunt-tipped herniotome with which this is done does not incise the skin except the buttonhole for its introduction. Since 1909 he has applied this treatment in five severe cases, all but one sequels of diphtheria. The patients were children from 2 to 4 years old and one young woman. The latter had worn a tracheotomy cannula for seven years after diphtheria at the age of 4. After its removal the tracheostomy could not be closed on account of the stenosis. All were completely cured with this slitting of the stenosis tissue plus retrograde dilation. He makes a point of removing the cylinder and the cannula every morning to allow the patient a chance to cough up mucus. They are then replaced at once.

129. **Visceral and Pulmonary Syphilis.**—Nicolaysen writes that unquestionable syphilis was found in 10.5 per cent. of 1,137 cadavers before 1906, and in 6.4 per cent. of the 2,695 since then. In a case described in detail the man of 51 had presented symptoms at 40 diagnosed as beriberi at the time. Later came ascites, with dyspnea, dulness over both lungs at the rear, and edema, but no fever; occasionally there was vomiting of brownish masses. Necropsy showed the brain, heart and large vessels apparently normal but a large gumma was found in one lung and smaller ones in the liver, pylorus and around the spleen, plus a fibrous orchitis. No signs of tuberculosis anywhere.

130. **Congenital Kidney Anomalies.**—Schaaning states that the solitary kidney and the displaced kidney are peculiarly subject to disease. He reports a case of each. Winter found pathologic conditions in sixty-five of 235 solitary kidneys. The displaced kidney may press on the bowel, bladder or genital organs and interfere with their functioning or induce neuralgia, etc., from pressure on nerves or vessels. Twelve cases of chronic renal tuberculosis with a spontaneous cure have been published in Norway, but the "cure" is usually at the expense of the functional capacity of the kidney. In two such cases, at necropsy or operation, the kidney felt as if made of cement.

131. **Acute Paralytic Occlusion of the Duodenum.**—Høyer applies this term to what others call acute arteriomesenteric occlusion, duodenojejunal ileus or acute gastroduodenal atony. The acute dilatation of the stomach is usually the most striking feature of the cases, and lavage of the stomach, with change to the prone position often bring relief and cure. In an otherwise typical case described there was no dilatation of the stomach, and von Haberer has published a similar case. The acute dilatation of the stomach may occur from some mechanical hindrance or from paralysis of the stomach or both. The mechanical hindrance may be from spasm of the pylorus from an impacted piece of meat or a polyp or a kinking of the pylorus or upper duodenum or from pressure from a tampon, as after a gallstone operation. When the mechanical hindrance is lower down, in the lower duodenum or upper jejunum, the course is less acute; the vomit contains bile, but no fecal matter, the peristalsis of the stomach is lively but the stomach may not become dilated, and in these cases no benefit is derived from change to the prone position. Gastroptosis seems to afford a predisposition. Høyer's experimental research on dogs has confirmed his clinical deductions that the explanation of the whole trouble is that the bowel becomes obstructed by paralysis and dilatation of the lower duodenum—irrespective of whether or not there is dilatation of the stomach. The occlusion is induced by some kinking or some fold or valve formation at the point where the loose duodenum joins the more solidly fastened and relatively narrow jejunum, that is, at the duodenojejunal flexure. Possibly also cases occur in which, without any actual mechanical occlusion, the lower third of the duodenum may become too weak to force its contents through the lumen of the flexure. Lavage of the stomach, the pelvis raised, and change of position are called for at once; the prone position or the knee-elbow, or merely lying on the right side may bring relief. If not, operative measures are indispensable. No food should be allowed by the mouth; fluids should be given by the rectum. When it is necessary to operate, jejunostomy with a drain introduced into the duodenum seems rational or, possibly better yet, expose the duodenum after dividing the gastrocolic ligament between two ligatures, and try to mobilize the flexure, making a small opening into the duodenum and inserting a drain. The cases on record in which gastrojejunostomy was done or merely the duodenum evacuated have given bad results, as also gastrostomy.

Ugeskrift for Læger, Copenhagen

Aug. 1, 1918, **80**, No. 31

132 *Test for Sugar. H. C. Hagedorn and B. N. Jensen.—p. 1217.

132. **Quantitative Determination of Minute Amounts of Sugar.**—Hagedorn and Jensen comment on some of the disadvantages of Bang's micromethod for determining the sugar content of blood; among others the extreme precision required in the boiling procedure, and the nondurability of the iodin solution. With potassium ferricyanid it is possible to obtain equally reliable findings without these drawbacks, as they describe in detail. The technic is based on the fact that a chemical once reduced does not become oxidized anew during the short time required for the test. Several tables are given showing the precision of the method. The technic is simple although five reagents are required.

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THE RETROGRADE MOVEMENT OF URETERAL CALCULI

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The advent of the roentgen ray marks the beginning of the period which is rightly characterized as the period of accurate and intelligent treatment of ureteral calculi. The roentgen ray, while contributing so largely to the diagnosis and treatment of this condition, is also accompanied by certain sources of error, chief of which are: (1) failure to demonstrate a calculus when present; (2) a wrong interpretation of shadows found in the plate, and (3) failure to find at operation a calculus which was definitely demonstrated by the roentgen ray to be in a "given portion" of the ureter.

1. With improved technic, failure to demonstrate the presence of a stone when present now makes up a very small percentage of cases. This small percentage can be still further reduced by subsequent examinations with the roentgen ray, by a careful rereading of the plates, by intra-ureteral injections of colloidal silver salts, and by the use of wax-tipped catheters.

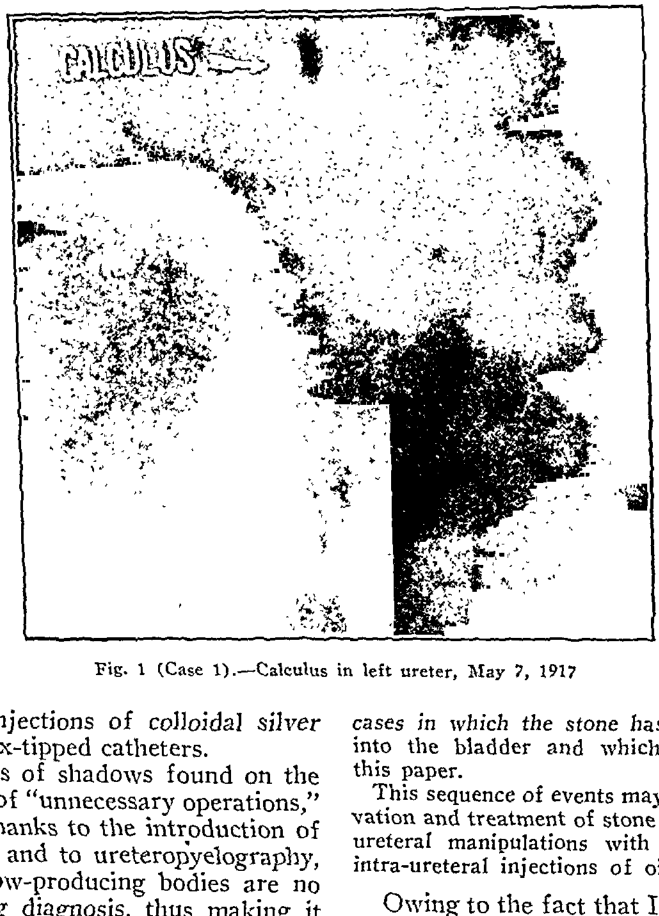

Fig. 1 (Case 1).—Calculus in left ureter, May 7, 1917

2. Wrong interpretations of shadows found on the plates have been the cause of "unnecessary operations," and still lead to them. Thanks to the introduction of the shadowgraph catheter and to ureteropyelography, these extra-ureteral shadow-producing bodies are no longer a source of wrong diagnosis, thus making it possible to avoid unnecessary operations. The nature and origin of these bodies have been described so many times that it is not necessary here to enter into a detailed discussion of them. There is still a very small percentage of cases in which the source of error consists in the passing of a shadowgraph catheter, localizing the stone or suspected stone shadow thereby, and yet finding no stone at operation. Another source of error consists in the fact that the shadow, while extra-ureteral, lies in the same plane as the shadowgraph catheter. To overcome this error, stereoscopic plates should be made in all doubtful cases.[1] Still another source of error will be considered under the next heading, on the failure to demonstrate at operation a calculus which was definitely demonstrated by roentgen ray in a given portion of the ureter.

3. There has been introduced into this topic another phase equally important as the ones just discussed, if not more important, because occasionally it results in an operation that fails to relieve the patient of the calculus. I refer to a condition which, for want of a better term, may be designated as the retrograde movement of ureteral calculi.

The circumstances are generally about as follows, in the order of their sequence:

The patient has symptoms and signs of stone in the ureter.

This is verified by the roentgen ray and the shadowgraph catheter.

The patient is operated on and no stone is found at the location in which a stone shadow was seen on the roentgenogram.

Further roentgenograms show that the stone has wandered back up the ureter or perhaps back into the kidney, excluding that group of cases in which the stone has wandered down the ureter or into the bladder and which are not to be considered in this paper.

This sequence of events may also occur following the observation and treatment of stone in the ureter by means of intra-ureteral manipulations with the ureteral catheter and the intra-ureteral injections of oil, glycerin, papaverin, etc.

Owing to the fact that I narrowly escaped this error, namely, of operating on the wrong part of the ureter, in one case, and because I saw the same phenomenon occur in a case under treatment without operation, and for the purpose of calling attention to this all-important fact, thereby possibly preventing others from falling into the same trap, I shall report two cases.

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[1] Recently we have used a new procedure which consists of making a double exposure on a single plate. The technic for this procedure is fully described in: Kretschmer, H. L.: A New Method for the Localization of Ureteral Calculi, Surg., Gynec. and Obst., to be published.

REPORT OF CASES

Case 1.—*History.*—A man aged 50, referred to me by Dr. Clifford McCullough, entered the Presbyterian Hospital, May 7, 1917, complaining of pain in his left side. This pain was first noticed about 1 p. m., May 5, and was dull in the beginning and later colicky in type. It radiated along the course of the ureter and into the scrotum. By 6 p. m. he had a chill and his temperature began to rise. Alternating periods of chill, fever and perspiration continued for forty-eight hours, when he was taken to the hospital. During this time the output of urine was scanty.

Fourteen years before the patient had had a severe attack of ptomain poisoning. In 1906 he consulted Dr. Frank Billings. At that time no stone was found in the urinary tract and a diagnosis of pyelitis was made. Since then he has had varying forms of treatment, and was sent abroad for the cure of Bright's disease. In 1907 he had another severe attack, lasting six weeks.

The last attack of renal colic occurred four weeks before I saw him and lasted for twenty hours. During some of the attacks he had severe spells of hiccup, one of which lasted for four days.

Seven years ago the patient passed a small stone.

The patient denied all specific infection. His habits were moderate. He used alcohol and tobacco only occasionally, and his diet was rigidly meat-free for years.

Examination.—The patient was well nourished and of good color. He suffered considerable pain. The pupils were equal and reacted to light and accommodation. The neck, lungs and heart were negative. The liver was palpable on deep inspiration, and there was considerable tenderness over the region of the left kidney and ureter. The kidneys and spleen were not palpable. The genitalia were negative and the reflexes were normal.

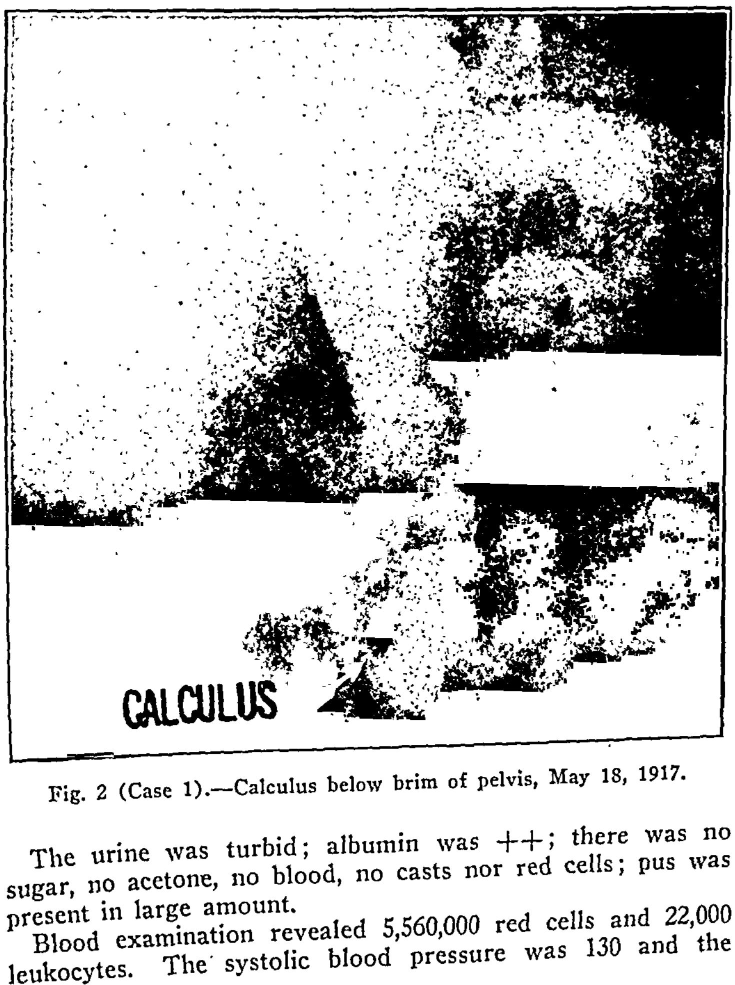

Fig. 2 (Case 1).—Calculus below brim of pelvis, May 18, 1917.

The urine was turbid; albumin was ++; there was no sugar, no acetone, no blood, no casts nor red cells; pus was present in large amount.

Blood examination revealed 5,560,000 red cells and 22,000 leukocytes. The systolic blood pressure was 130 and the diastolic 70.

Roentgenoscopy revealed a calculus in the left ureter at the level of the fourth lumbar vertebra (Fig. 1).

On cystoscopic examination the bladder was negative except for a slight amount of congestion around the internal urethral orifice. Both ureteral orifices were normal. Because of the large size of the stone, it was thought advisable to increase the size of the left ureteral orifice. Therefore, the left ureteral orifice was slit with the scissors, introduced through the operating cystoscope. A ureteral catheter was passed until an obstruction was met high up in the ureter, and 20 c.c. of sterile oil were injected.

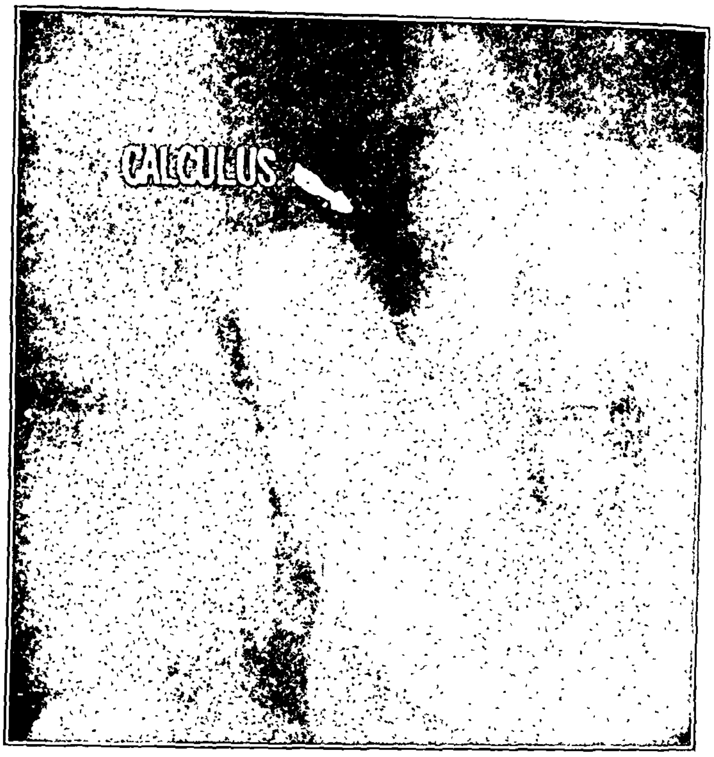

Fig. 3 (Case 1).—Calculus over edge of sacrum, May 27, 1917.

Treatment and Course.—Following the cystoscopy, the patient became very toxic and had a chill which lasted twenty minutes and a temperature of 103; he was somewhat irrational. This was followed by hiccup, which lasted five days.

At a phenolsulphonephthalein test, June 10, the appearance time was eight and one-half minutes; the output for the first hour was 18 per cent., and for the second hour, 20 per cent.

From May 19 to June 21, the patient received a total of four injections of sterile olive oil into the left ureter, the amounts varying from 15 to 25 c.c. During this time he also received four injections of a 2 per cent. solution of papaverin hydrochlorid.

The patient left the hospital, June 19, very much improved.

A series of roentgenograms, made at various dates from May 7, 1917, to Feb. 5, 1918, show that the calculus, during the intra-ureteral treatment, wandered from a position opposite the third lumbar vertebra down into the pelvis, so that it was seen lying along the margin of the sacrum (Fig. 4). Just before the patient left the hospital, another roentgenogram was made; this showed that the stone had wandered back up the ureter so that it lay opposite the transverse process of the fourth lumbar vertebra.

Two subsequent roentgenograms, one made Aug. 8, 1917, and one Feb. 5, 1918, showed the stone in approximately the same position as it was when the patient left the hospital.

From a review of this series of roentgenograms (Figs. 1, 2, 3, 4, 5, 6 and 7), it is evident that the stone wandered from the lumbar portion of the ureter into the pelvic portion and subsequently wandered back up into the lumbar portion of the ureter. These roentgenograms, however, did not show the lowest position which the stone attained, for at one of the ureteral catheterizations the catheter met an obstruction about 1 inch above the ureteral orifice.

Case 2.—*History.*—A physician, Dr. Z., aged 38, had an attack of renal colic fourteen years before, associated with pain in the penis and testicles, during which time he passed two small kidney stones. In the summer of 1914 he again noticed some blood in the urine. In 1915 he had a very severe hemorrhage, passing about a pint of port wine colored urine without any pain; he also passed a great many large clots. The hematuria has been more or less continuous ever since; at times the urine was clear for a few days. The last attack of hematuria occured a week before his admittance, Aug. 14, 1917. He also complained of pain in the left groin. This was so distinct that he could put his finger on the spot, and at times was so severe that he was obliged to take morphin. The only urinary symptom was that of pain, which was always present at the end of urination. The patient had a backache, which was dull in character and aggravated by standing.

Examination.—The general physical examination was completely negative.

Examination of the urine revealed an alkaline reaction, specific gravity 1.020, albumin +, blood +, and no sugar. Microscopic examination revealed pus cells and red blood cells.

A roentgenogram, made by Dr. H. E. Potter, disclosed the presence of a stone in the left ureter, near the junction of the ureter with the bladder (Fig. 8). The kidneys were negative.

Cystoscopic examination revealed the bladder and ureteral orifices normal.

Treatment and Course.—At ureteral catheterization the ureteral catheter met an obstruction 1 inch above the ureteral orifice. Because of the low lying position of the stone, as verified by roentgenoscopy and obstruction to the catheter, it was decided to slit the ureteral orifice with the operating scissors and to inject papaverin and oil into the ureter. In all, the patient received three injections of oil and papaverin without the position of the stone changing.

In view of the fact that the stone failed to respond to this treatment, and because of the subjective symptoms, which were enough to interfere with the patient's occupation, it was decided to operate. I had planned to perform a suprapubic cystotomy and remove the stone transvesically. Just before the patient was taken to the operating room, another roentgenogram showed the stone lying between the fourth and fifth lumbar vertebrae (Fig. 9).

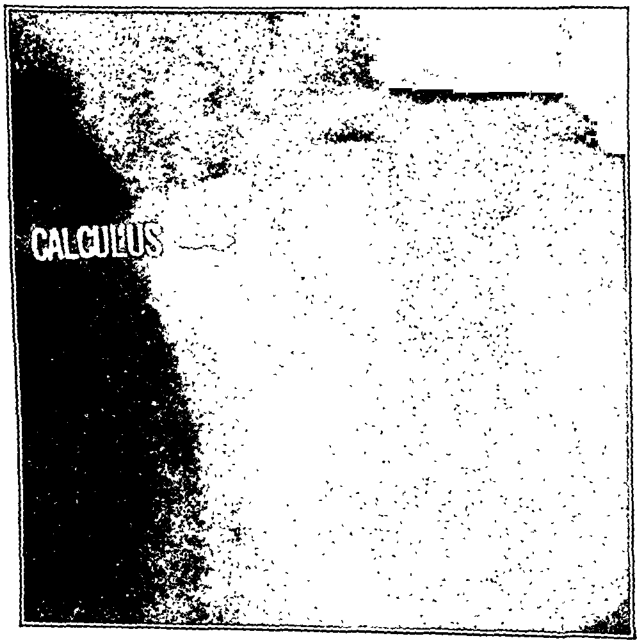

Fig. 4 (Case 1).—Calculus at edge of sacrum, June 1, 1917.

From these pictures, made Aug. 14 and Oct. 5, 1917, it is clear that the calculus wandered back up the ureter from a point just outside the bladder to a point in the lumbar portion of the ureter between the fourth and fifth lumbar vertebrae.

I removed the stone by an extraperitoneal ureterotomy. This precautionary measure of taking a roentgenogram just before the patient received the anesthetic prevented my carrying out the operation originally planned, namely, a suprapubic operation, which, had it been carried out, would not have been successful under the circumstances.

COMMENT

The question that most naturally arises from the experience of having two cases of retrograde movement of ureteral stone is, How is it possible for a stone to wander back up the ureter for a varying distance or even to wander back into the renal pelvis?

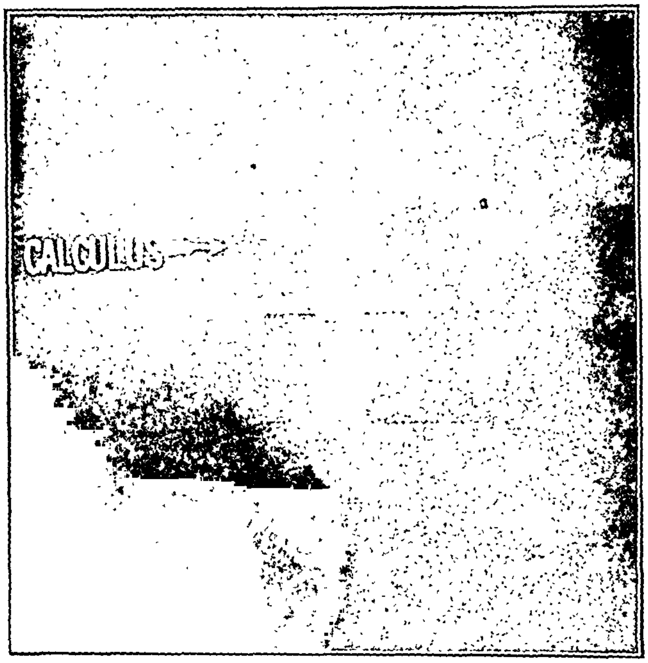

Fig. 5 (Case 1).—Calculus opposite fourth lumbar vertebra, June 19, 1917.

Two possibilities at once suggest themselves:

1. In the first group of cases the ureter is dilated, either as the result of the presence of the stone or of some other pathologic condition, as stricture, to such a degree as to permit the stone to fall about at will, so that when the patient is erect the stone will lie in the lowest part of the ureter, and when the patient is placed on his back or in the Trendelenburg position, the stone falls "up" the dilated ureter for a variable distance or may even be found in the kidney pelvis.

This explanation suffices in a certain number of cases and has been proved correct at the time of operation, when the ureter was found enormously dilated. Cases belonging in this category have been reported by various authors, and in this connection may be mentioned the cases reported by Legueu,[2] Escat,[3] Thomas,[4] Holland,[5] Jeanbrau,[6] Hunter[7] and Fowler.[8]

Owing to the scarcity of cases reported, it appeared to be desirable to collect as many instances as possible from the literature at hand and make brief abstracts. These are given at the end of the paper.

From some of the case reports it appears that the stones were located in dilated ureters and that because of the dilatation the stones were able to wander up and down the ureter at will. This conclusion is borne out by the fact that the stones were changed in location by changes in the position of the patients, and furthermore by the fact that at the time of operation the ureter was found to be dilated.

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[2] Legueu: Bull. et mém. Soc. de chir. de Paris, 1906, **32**, 357-358.

[3] Escat: Tr. Assn. franç. d'urol., 1908, **12**, 340-354.

[4] Thomas: Ureteral Calculi, Liverpool Med.-Chir. Jour., 1912, **32**, 324.

[5] Holland, C. T.: Proc. Roy. Soc. Med., 1900-1910, 3. Electrotherap. Sec., pp. 87-97.

[6] Jeanbrau, Emile: Tr. Assn. franç. d'urol., 1909-1910, **13**, 1-175.

[7] Hunter, J. W.: Discussion on Lithiasis, abstr., The Journal A. M. A., Nov. 3, 1917, p. 1496.

[8] Fowler: Tr. Am. Assn., G.-U. Surg., 1915, p. 178.

2. The second group of cases, namely, those in which no dilatation of the ureter was found at operation, will have to be explained on another basis—that the retrograde movement of the stone was the result of reversed peristalsis of the ureter.

Reversed peristalsis occurs in other hollow viscera, such as the intestine, and it seems reasonable to assume that this phenomenon is also possible in the ureter, although many authors question this.

Evidence tending to substantiate this view has been brought forth both clinically and experimentally. That fluid can travel from the bladder up into the kidney has been demonstrated roentgenographically by various observers in cases in which there was no disease of the genito-urinary tract. In a study of a large number of cystographs made in normal cases, I[9] have shown that solutions of thorium, collargol or cargentos, placed in the bladder, can find their way into the renal pelvis. In cases in which there is disease of the ureteral orifice (tuberculosis) that would interfere with the normal closure, this would of course occur, but these cases do not come under consideration here.

The question may therefore be raised that if it is possible to have fluid propelled up into the pelvis of the kidney from the bladder, is it not possible to have a stone transported upward by reversed peristalsis?

Besides this above-mentioned proof of the possibility of fluid going up into the kidney from the bladder, there can also be brought forth experimental work in which the phenomenon has been demonstrated in laboratory animals. In view of the fact that a regurgitation is possible, it naturally brings up the question of the mechanism by which this regurgitation takes place.

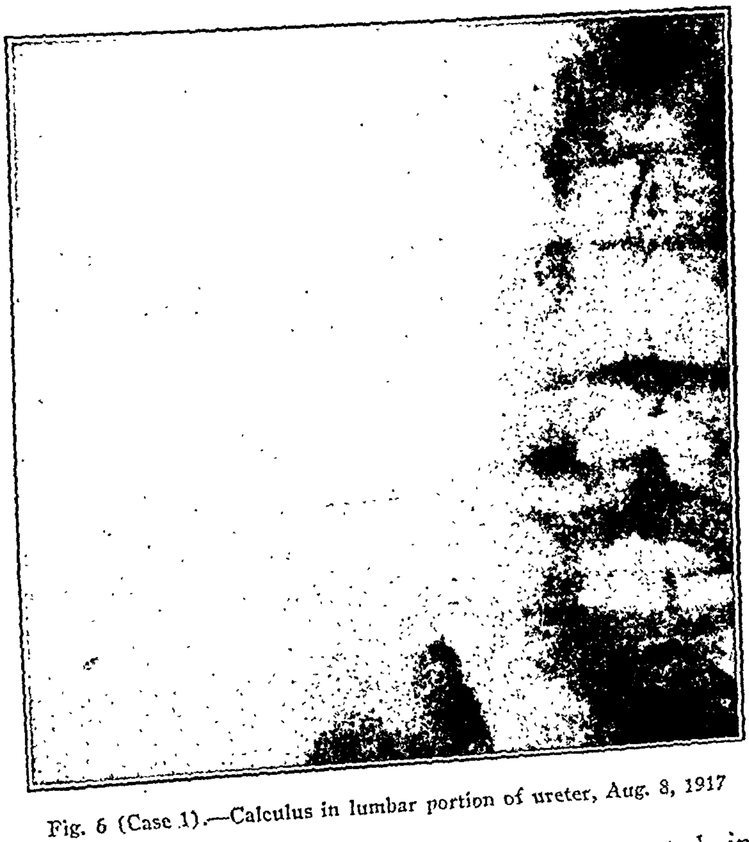

Fig. 6 (Case 1).—Calculus in lumbar portion of ureter, Aug. 8, 1917

The following possibilities may be mentioned:

First, that the ureter remains passive; that at the time the ureterovesical valve or sphincter opens to permit the escape of urine, the fluid in the bladder finds its way up the ureter.

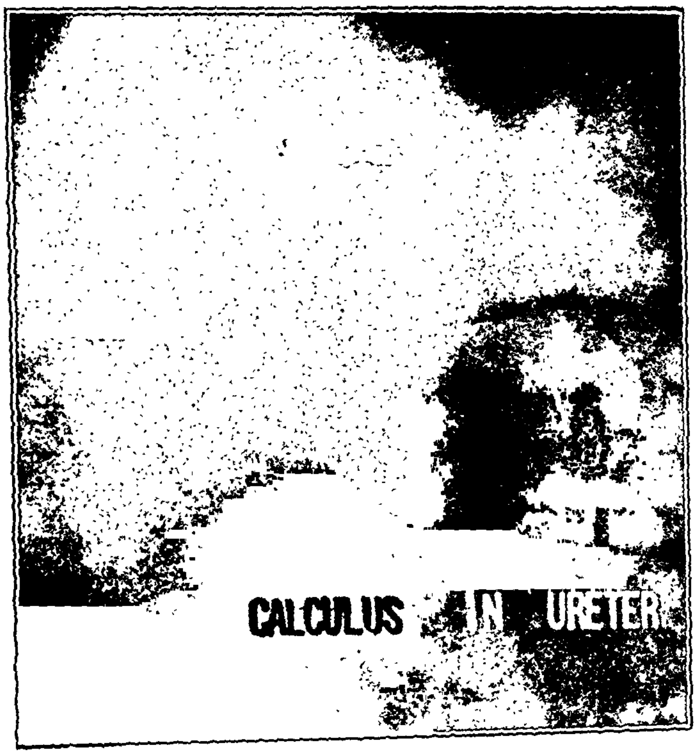

Fig. 7 (Case 1).—Calculus in practically the same position, Feb. 5, 1918.

Second, that the fluid is propagated upward by a reversed peristalsis, and if fluid may be propagated upward by a reversed peristaltic action, why cannot the same reversed peristaltic action be responsible for the retrograde movement of at least some of the ureteral calculi?

Reversed peristalsis of the ureter was demonstrated experimentally by Semblinoff in 1883; he was probably the first to demonstrate a back flow of urine from the bladder to the kidney. He demonstrated the following facts:

1. That a back flow of urine from the bladder into the ureters and kidneys may take place under normal anatomic conditions.
2. That this may be caused by a series of combined movements of the bladder and ureter.
3. That this explains the kidney changes in cases of pyelonephritis of vesical origin.

Semblinoff,[10] by the mechanical irritation of a dog's bladder distended to a certain degree, produced antiperistaltic movements of the ureter, so that Berlin blue solution was driven back through the ureters from the bladder to the kidney pelvis.

In 1893, Lewin and Goldschmidt[11] took up the question of reversed peristalsis and regurgitation of fluid up the ureter. Reviewing their experiments, they found that there was a reflex of bladder contents into the ureter and kidney pelvis. They likewise observed both peristaltic and antiperistaltic movements.

According to Alksne,[12] every part of the ureter is irritable and reacts to mechanical and electrical stim-

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[9] Kretschmer, H. L.: Surg., Gynec. and Obst., 1916, **23**, 709.

[10] Semblinoff, quoted by Alksne, J.: Folia urol., 1907, **1**, 338-365.

[11] Lewin and Goldschmidt: Virchows Arch. f. path. Anat., 1893, **134**, 33-70.

[12] Alksne, J.: Folia urol., 1907, **1**, 338-365.

ulation with contractions. The contractions produced by stimulating any given segment of the ureter are transmitted in both directions, toward the kidney as well as toward the bladder. On irritating the bladder end of the ureter, pronounced antiperistaltic waves are produced.

From the above-mentioned facts it must be conceded that reflux of fluid up the ureter is possible and that reversed peristalsis has been amply demonstrated in the laboratory. In the face of this clinical and laboratory evidence, it would appear logical to assume that the calculi in a certain percentage of cases change their positions because of the presence of a dilated ureter, and that in a certain number of them the retrograde movement of the stone is due to reversed peristalsis.

CASES REPORTED IN THE LITERATURE

Legueu[7].—In a patient, aged 30, who had recurrent attacks of kidney colic, a roentgenogram disclosed two calculi in the left kidney that were movable and could be displaced. In a series of ten roentgenograms the calculi were never found in the same location; sometimes they were in the kidney and sometimes in various places along the ureter. At operation the kidney was dilated and the pelvis and ureter more so.

Escat.[3]—A man, aged 36, had attacks of pain, vomiting and difficult urination. Cystoscopy revealed a calculus protruding from the ureteral orifice. A roentgenogram revealed a calculus in the prevesical ureter. Suprapubic cystotomy was performed; and the stone, which could be seen with the cystoscope, could not be seen. It was felt 8 cm. from the ureteral meatus. The ureteral orific was slit, and the patient subsequently passed the stone.

Thomson-Walker.[13]—In a patient on whom operation was performed, a round calculus the size of a marble traveled from the lower part of the pelvic ureter into the lumbar ureter, when the patient was placed in the Trendelenburg position.

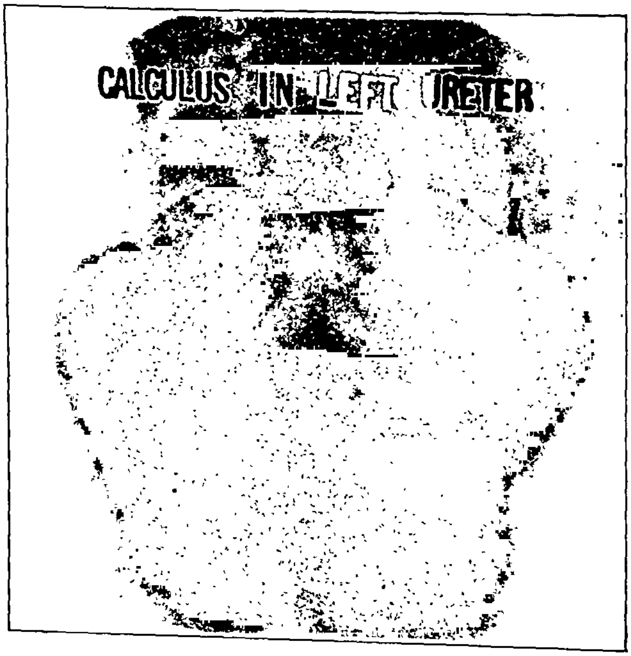

Fig. 8 (Case 2).—Calculus in pelvic portion of ureter, Aug. 14, 1917, about seven weeks before operation.

Thomas.[4]—A man, aged 23, gave a history of stoppage of urine and hematuria. Four sets of roentgenograms were taken on four different days with these findings: November 13, one stone in kidney, two in pelvic ureter and two (?) in bladder; November 22, one in kidney, one in pelvic ureter and three (?) in bladder; November 25, one in kidney, one in pelvic ureter and three in bladder; November 27, four in pelvic ureter and one in bladder. At operation one stone was found in the bladder, and four were removed from the dilated portion of the ureter. Thomas concludes that the dilatation of the ureter permitted the stones to move up and down according to the position of the patient.

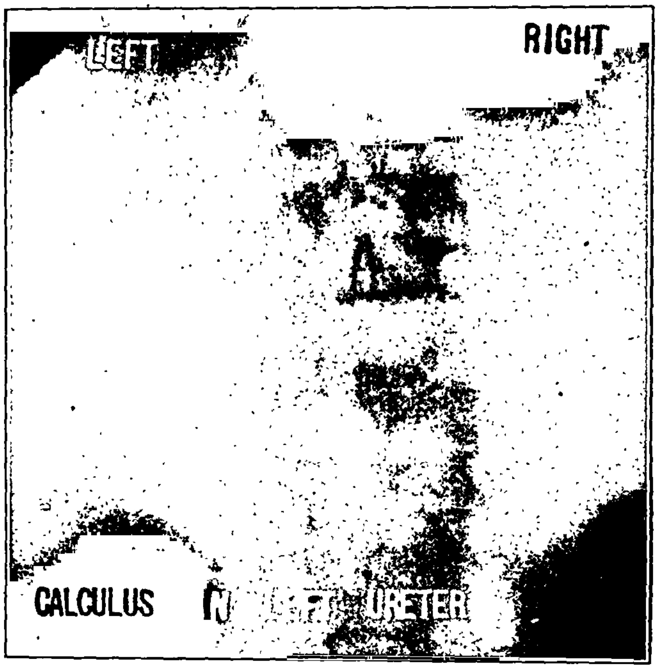

Fig. 9 (Case 2).—Calculus in lumbar ureter, Oct. 5, 1917, just before patient was anesthetized.

Codman.[14]—The ureter was greatly dilated, associated with an intravesical cyst of the ureter. Codman believes that the high position of the stones found at operation was due to the Trendelenburg position of the patient.

Hunter.[7]—A woman was operated on twice for stone in the lower ureter and no stone was found, although at the operation the ureter was found dilated and inflamed. Later the stone was found in the pelvis of the kidney. When the patient was up the stone would descend to the lower end of the ureter, but when she remained in bed it worked back up into the kidney.

Fowler.[8]—In a case of stone in the ureter Fowler had the unpleasant experience of operating and failing to find the stone. He finally succeeded in removing it from the kidney.

Holland.[5]—A woman, aged 45, had had attacks of pain in the right loin with backache and hematuria for six years. Roentgenoscopy revealed a small calculus in the right kidney and also a very large shadow in the pelvis, more than an inch long. The small kidney stone was removed and the ureter probed, but no other stone was found. On roentgenoscopy the next day, the large pelvic shadow had disappeared. Two and a half months later the patient returned with the same complaint, and a roentgenogram revealed the same shadow in the right kidney. Another roentgenogram, made a few days later, just before the patient was to be operated on, revealed no shadow in the kidney pelvis, but a stone was seen in the lower end of the ureter. The ureter was opened and the stone removed. The ureter was dilated and this large stone could apparently move at will up and down its whole length.

122 South Michigan Avenue.

A Long Life.—"He lives longest," says an ancient proverb, "that is awake the most hours."

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[13] Thomson-Walker: Surgical Diseases and Injuries of the Genito-Urinary Organs, London, 1911.

[14] Codman, E. A.: Boston Med. and Surg. Jour., 1908, **158**, 828-831.

ISOLATED DISEASE OF THE SCAPHOID *

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A pathologic condition limited to the scaphoid bone of the foot is rarely observed. First described by Köhler in 1908, it has since been known as "isolated disease of the scaphoid," or "Köhler's disease." Including the three cases described by Köhler, thirteen cases of this condition have been reported in the literature. Having had the opportunity of observing such a case recently, I have found it worth while to report it, incidentally directing attention to certain distinguishing features concerning its pathologic history.

REPORT OF CASE

A boy, aged 7 years, was brought to see me, Nov. 6, 1917. Lameness was the chief complaint. The family history was negative as to tuberculosis and syphilis. Both parents are living and well. The home surroundings, the rural environment of a prosperous farmer, had been ideal. The child had never had any illnesses, except measles and infected ears the preceding two winters, his health having been apparently perfect.

About two weeks before he came to see me, it had been noticed that he was limping and lame in his right foot. There had been no previous injury, except about six weeks before the onset of his symptoms, when a board had fallen across the dorsum of his foot. The lameness had persisted. Pain had seldom been complained of, and never when he was off his feet. There had been no night cries. A slight swelling had been noticed over the inner side of the dorsum of his foot.

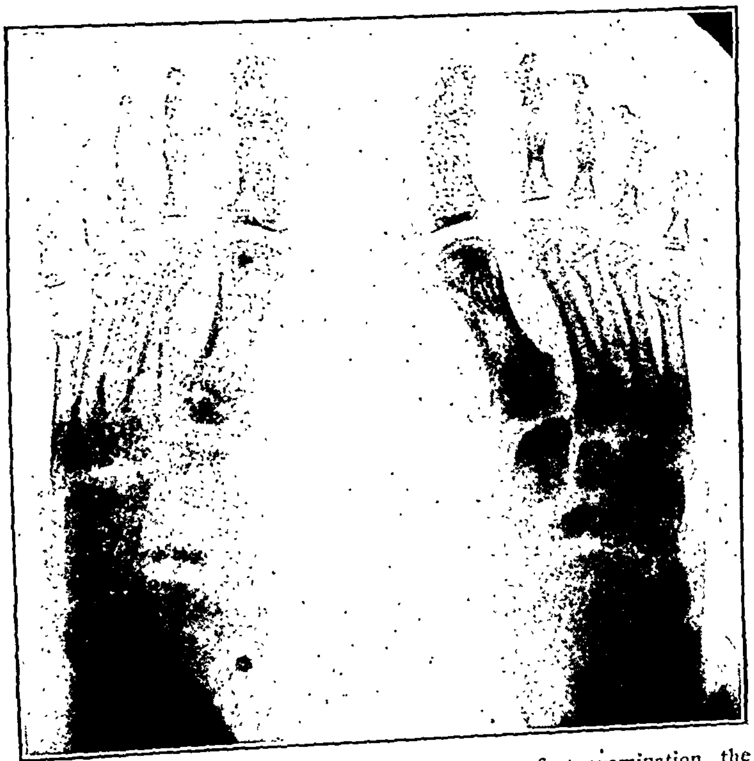

Fig. 1.—Roentgenogram of both feet taken at first examination, the right or diseased foot being shown at the left.

The physical examination revealed a well nourished, healthy looking boy. The general examination was negative. He walked with distinct lameness of the right foot. The ankle joint function was normal. Locally, there was a slight swelling over the inner side of the dorsum, also a slight tenderness, but no discoloration. When he stood and bore weight, there was marked pronation and bulging of the inner side of the foot.

The boy presented very notched teeth, but the Wassermann reaction was negative, likewise the von Pirquet reaction.

Roentgen-ray examination disclosed a typical appearance of the scaphoid. Lantern slides will demonstrate them better than I can describe them. Briefly, the shadow of the scaphoid was smaller than normal and irregular in outline, and the cortex and spongy portion showing no distinction (Figs. 1 and 2).

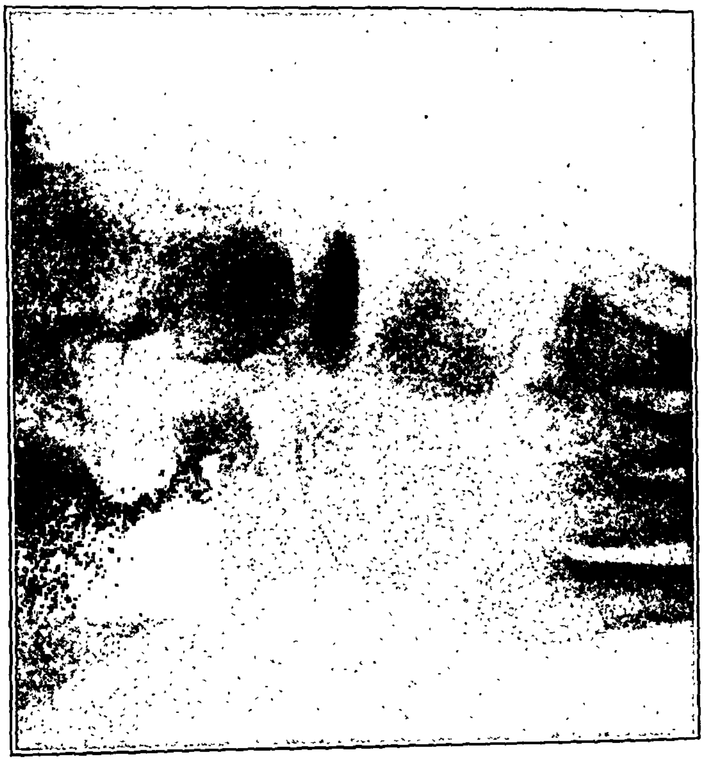

Fig. 2.—Right foot at first examination.

The diagnosis was Köhler's disease of the scaphoid. Treatment consisted of immobilization in plaster-of-Paris and crutches.

Two months later, the boy was brought to see me again and the plaster was removed. All swelling and tenderness had disappeared and he was in his usual good physical condition. Another roentgenogram showed much improvement, as seen in the increased size and filling out of the irregular bone (Fig. 3). The density was also better. Another plaster dressing was applied and the patient was sent home.

Three months later, or five months after the first examination, he again returned to Portland. The plaster was removed and the foot looked normal in every way. Another roentgenogram disclosed an almost perfect scaphoid, and he was considered practically cured (Fig. 4). Living several hundred miles away, he was sent home with another plaster dressing to be worn for a month, with instructions to follow it with adhesive plaster strapping and to wear a supportive shoe while gradually resuming use of the foot. Late reports are that the boy seems perfectly well.

ETIOLOGY

There is nothing new to be offered as explanatory of the etiology or nature of the affection. Numerous theories as to its etiology have been advanced, but the situation is still doubtful. With Pfahler,[1] all authors agree that it is not tuberculous. Fassett[2] inclines to the theory that it is a mild tuberculous focus, the wall of cicatrization having been broken down by some trauma. My own case does not impress me as tuberculous, as the amount of bone involvement pres-

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* Read before the Section on Orthopedic Surgery at the Sixty-Ninth Annual Session of the American Medical Association, Chicago, June, 1918.

[1] Pfahler, G. E.: Surg, Gyn. and Obst., 1913, **17**, 625.

[2] Fassett, F. J.: Isolated Disease of the Scaphoid, The Journal A. M. A., April 11, 1914, p. 1155.

ent within two weeks of the onset of symptoms and its rapid disappearance under treatment do not harmonize with the history of known tuberculous bone disease. The recovery has been too prompt and too complete to be consistent with tuberculosis.

That syphilis was not a factor in my case, in spite of the negative history and Wassermann reaction, is shown by the fact that recovery took place without any antispecific treatment.

Trauma has been considered a factor. While my case gives a history of a board falling across the foot six weeks before the onset of any symptoms, the circumstance seems almost too inconsequential to be a factor of much importance. Still Pfahler considers the condition as an osteitis, probably of traumatic or rheumatic origin, which interferes with the development of the bone. That it is inflammatory, almost all authors agree, but as to the nature of the inflammation, we are still at sea. Hetzel,[3] in his valuable paper of a year ago, notes the similarity of the condition and osteochondritis juvenalis of the hip, both occurring in the epiphysis at the height of ossification.

Delayed ossification has been suggested, but if one compares the roentgenograms of both feet (Fig. 1) in my case, it would be hard to explain why one foot lagged so far behind the other, except on account of trauma, which in my case would seem hardly sufficient.

The diagnosis is the important feature; for when once recognized, the prognosis is absolutely good, both as to function and cure, under rest and support in a comparatively brief period of time. Before this section, it is unnecessary to emphasize the importance of routine roentgen-ray examinations. But their importance should be more generally recognized. How often children are presented to us with weak feet or flatfoot! As they are at times associated with moderate swelling and tenderness, pronation on standing, and limping, especially if unilateral, we should be on our guard and make the roentgenogram a part of our examination. At times we all see tuberculous ankles that have been treated as flatfoot. Likewise these affections, similar to the one under discussion, should not be considered as a broken arch or flatfoot and so treated. The discovery of one such case all the more thoroughly justifies routine roentgen-ray examination in all foot cases of doubtful history.

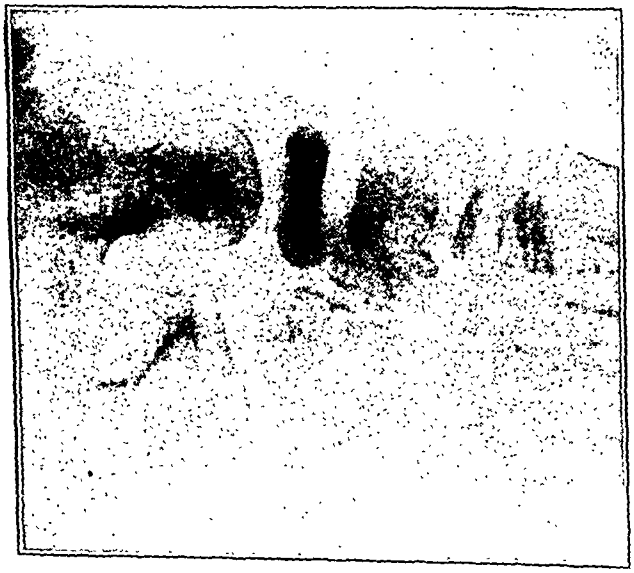

Fig. 3.—Right foot two months later.

ABSTRACT OF DISCUSSION

Dr. Willis C. Campbell, Memphis, Tenn.: I have had two cases of this condition within the past year, and two others in previous years. Trauma did not seem to be the cause in any of the cases I have seen. In one of my cases the Wassermann was 2 +, and it was interesting that the grandmother of this child was under my care for syphilitic periostitis, with a 3 + Wassermann. The grandmother responded to treatment. The child has been on antisyphilitic treatment, and I am doubtful whether the improvement in the condition has anything to do with the treatment. The roentgen-ray findings are quite characteristic, as Dr. McClure described. For instance, in the scaphoid the edge is somewhat irregular in appearance, and on the side view it looks like a flattened coin. I have not used plaster or any other form of fixation in these cases. I have used a simple steel arch support, which has been quite sufficient.

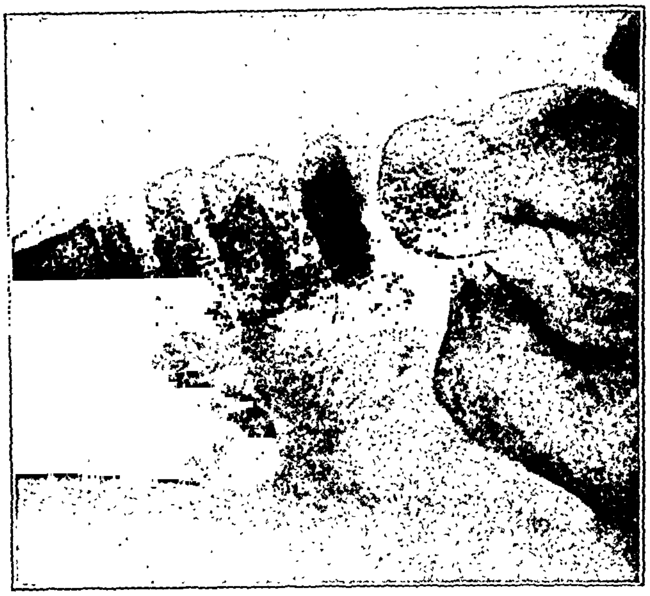

Fig. 4.—Right foot five months after first examination.

Dr. S. C. Baldwin, Salt Lake City: I should like to know what treatment the doctor used, if any, besides the plaster cast.

Dr. Charles R. McClure, Portland, Ore.: The treatment consisted exclusively of immobilization in plaster of Paris and keeping the weight off the foot.

Cooperation in Treatment.—The late S. Weir Mitchell was a marvel of proficiency in curing patients. Those associated with him professionally usually endeavored to appropriate and apply his methods. To those of his assistants like myself, having experience with other neurological clinicians, illuminating contrasts are afforded. In my opinion the chief instrumentality of his amazing successes was his prompt and cordial cooperation with experts in correlated lines, himself not attempting to do it all. The distinguishing characteristic of Dr. Mitchell was his radiant energy and his clear-sighted recognition of the value of joint action. He so stimulated the zeal of his adjutants as to get the best out of them not only in diagnosis but in treatment. Thus an efficient coalition was constantly at work. He uniformly said and did the judicious thing to create and maintain team work. In leadership he was wisdom personified in plan, in strategy, in shifting the point of approach, in creating useful surprises, in persistent effort, thus achieving the most economic and permanent results.—J. M. Taylor, *Pennsylvania Medical Journal*, September, 1918.

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[3] Hetzel, W. B.: Am. Jour. of Orthop. Surg., 1917, **15**, 214.

FRACTURE OF THE SPINAL COLUMN WITH AND WITHOUT CORD INJURY

NORMAN SHARPE, M.D.
NEW YORK

When the subject of fracture of the spinal column is under consideration, we think of it in terms of cord symptoms—impairment of motility and sensation, or paralysis with disturbance of sphincteric control. This is natural, for in by far the greater number of fractures of the spine, the cord or its roots are involved, and the bony fracture itself is a minor hurt compared to the possible result if the cord also is injured.

There are, however, a large number of spinal fractures (Pearce Bailey estimates this to be one third of all cases) in which the cord and its roots escape damage. Unless careful examination is made, these cases are apt to be diagnosed as sprain or contusion. In a recent article I[1] reported such a case, a fracture dislocation of the second cervical vertebra without damage to the cord. Since then I have seen five other cases, in some of which the bone injuries were such that it is difficult to understand how the cord escaped involvement.

In four of these cases the fracture occurred in the vertebral bodies, in two of them the bodies being almost completely crushed. Yet these patients were able to stand and move after the accident. As we know that many of the posterior arches or laminae can be removed without materially weakening the spine, and, as we have just seen, crushing of a vertebral body does not render one unable to stand erect, it is apparent that the main support or strength of the spinal column lies in the articulations on the transverse processes. And it is rare in fracture by indirect force to have the cord injured (except by hemorrhage) unless there is rupture of these articulations. The converse is also true, that the most severe injuries of the cord are seen when these articulations are ruptured, the familiar unilateral or bilateral fracture-dislocation of one or more vertebrae.

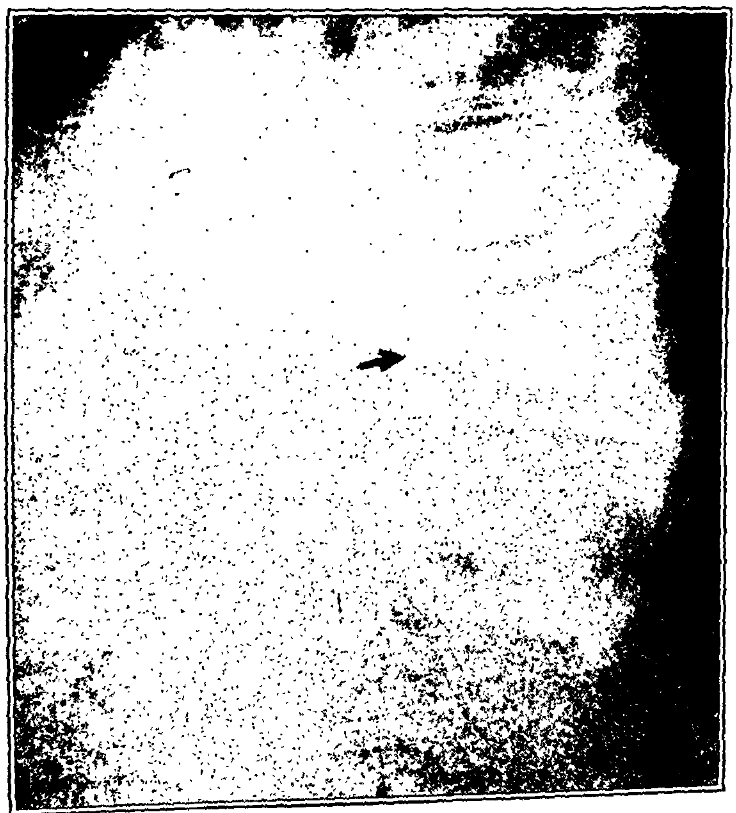

Fig. 1 (Case 1).—Fracture of the body of the eleventh dorsal vertebra.

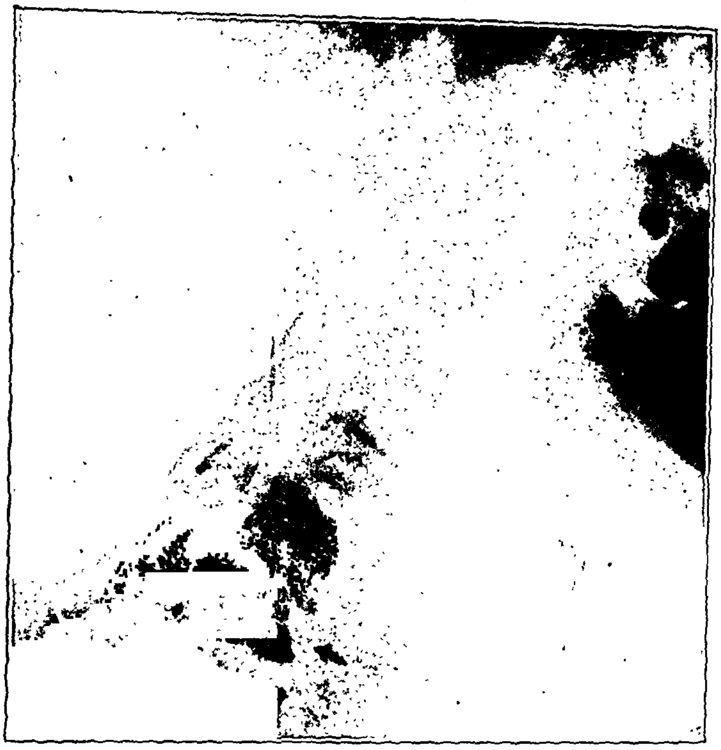

Fig. 2 (Case 2).—Fracture-dislocation of the sixth cervical vertebra.

In fracture-dislocation, the displaced vertebra may remain displaced, or spring back partially or completely into its normal position, leaving as the only signs of its dislocation the signs of cord injury. These signs may vary from partial paralysis to complete abolition of all function below the lesion, giving rise to the suspicion that the cord has been completely crushed at the point of injury. But, as was pointed out in a former article,[1] complete abolition of function below the lesion in a spinal fracture does not prove that the cord is completely crushed or severed, or even that it is damaged beyond repair. This has been shown time and again at operation, and also in the after-results in unoperated cases.

In a case recently seen by me, one and a half years after the accident, there had been a fracture of the fifth and sixth cervical vertebrae, with complete loss of function below the lesion. On the ground that this showed complete destruction of the cord, operation was withheld. Three months after the accident there was slight return of power in the right leg and partial return of sensation over the body below the lesion. At this time operation was again withheld, on the ground that the improvement was too slight to make it worth while to operate, and, on the other hand, that as the condition was improving it would be better to wait and see how much it would improve. Eighteen months after the accident the patient reported that improvement had ceased at the end of one year. He could weakly raise the arms, but could not bring them down, and could weakly extend and flex the right foot and leg. There was hypesthesia to all forms of sensation below the lesion, with complete loss of sphincteric control. He could not stand or even sit. Laminectomy was done and the laminae and pedicles of the fifth and sixth cervical vertebrae were found fractured and jammed about the cord, severely compressing it. The dura had not been torn, and the cord, though pale, was of normal appearance otherwise. Following operation there has been gradual return of power, so that now, six months after operation, there is fair strength in the arms, especially in the right, and the patient is able to walk with crutches. Hypesthesia has been replaced by areas of hyperesthesia and paresthesia. He is still improving.

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[1] Sharpe, Norman: Am. Jour. Med. Sc., 1916, **152**, 865.

Though helped by late operation, how much more benefit would this patient have received by an early laminectomy. The only reliable sign that proves a complete crush of the cord, and the only contraindication to early operation, is a bony deformity so great as to show complete obliteration of the spinal canal. By the term "early operation" is meant a laminectomy after the patient has rallied from the initial shock of the injury. Naturally if the injury has been so severe, or if the patient's vitality is such, that he cannot rally from the condition of shock, any operation at this time will hasten death. A safe general rule to follow is not to operate while the pulse is above 110.

In many fractures of the spinal column without cord signs, the fracture has been entirely overlooked. In the case of a woman previously reported who fell on a stairway striking the back on a step, there were no signs of nerve involvement, and a fracture was not suspected. Months after the accident and when all pain had long since disappeared, cord symptoms appeared and gradually increased. Only when they became marked was attention directed to the old accident, and roentgenoscopy disclosed marked callus formation at the site of the injury, the twelfth dorsal and first lumbar vertebrae.

In the absence of cord symptoms and no marked protrusion or "knuckle" of the spine, the diagnosis is apt to be "simple sprain or contusion." Thus in Case 3, in which there was a marked crushing of the body of the twelfth dorsal vertebra, at the hospital to which the patient was first taken he was told that the injury was simply a contusion, and no roentgenogram was taken.

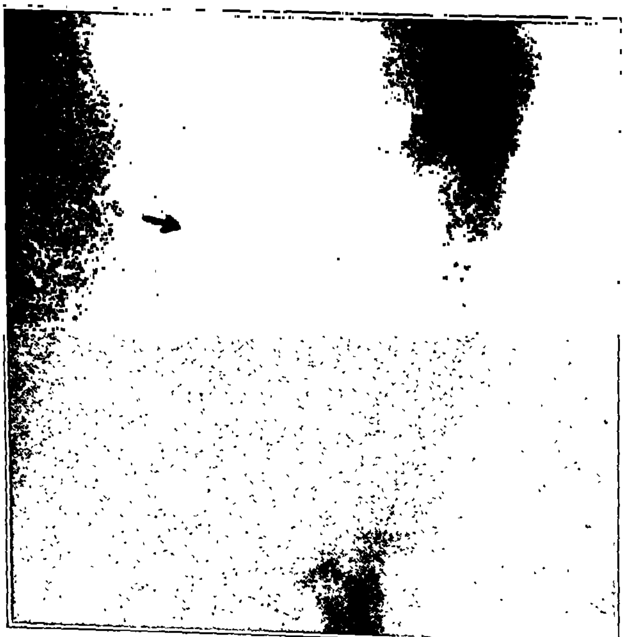

Fig. 3 (Case 3).—Crushing of the first lumbar vertebral body.

If other injuries are present, the spinal fracture without cord involvement is apt to be overlooked. In Case 4, in which severe burns of the arms and shoulders were sustained in addition to the injury of the back, the burns were treated as the principal lesion, and in the absence of cord symptoms no attention was given to the spine, though the patient complained of pain in the lumbar region. Three weeks later, when the burns were nearly healed, the persistence of the pains directed attention to the spine, and examination revealed alteration in the normal spinal curve in the dorsal lumbar region. Roentgenoscopy disclosed a marked crushing of the body of the twelfth dorsal vertebra.

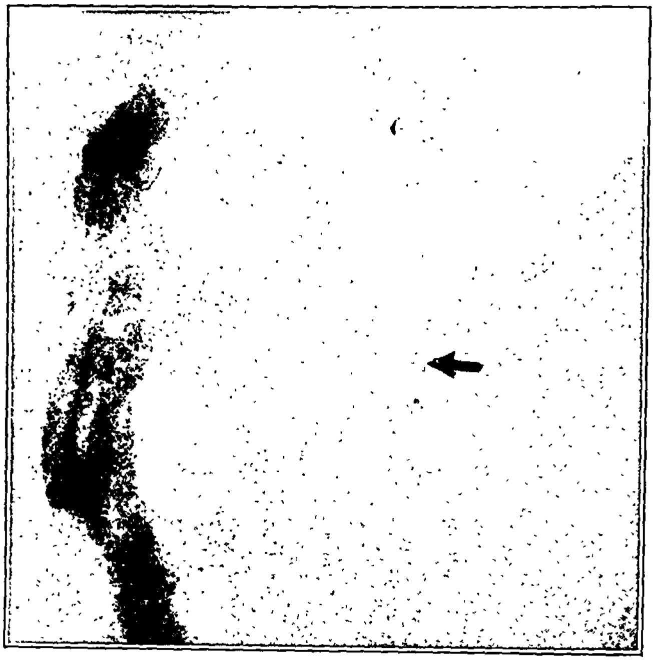

Fig. 4 (Case 4.—Crushing of the twelfth dorsal vertebral body.

These cases indicate the necessity of careful examination, both clinical and by the roentgen ray, of all cases of suspected injury to the spine. Although in neither of these cases did the failure to recognize a spinal fracture result seriously, it is readily conceivable that in a patient able to move about in bed with the fracture not immobilized, sudden twisting or turning movements by the patient or his attendants might easily convert a fracture without cord signs into a fracture with marked and serious cord involvement. Also failure to recognize a fracture and no attempt made to restore the normal spinal curve may result in weakening of the spinal column and more or less permanent disability, with perhaps appearance later of cord symptoms, due to new bone formation. This is especially true when the fracture occurs in the vertebral bodies.

The treatment of fractures of the spinal column without cord symptoms is immobilization. In fractures of the cervical vertebrae, immobilization is best secured by a plaster collar. If the fracture is high in the cervical region, an extension should be made from the collar about the forehead. If the fracture lies in the lower cervical region, an extension should also include the upper chunk. After from six to ten weeks, when all pain and tenderness have disappeared, the plaster may be followed by a stiff leather collar, which gives support but is more comfortable and allows greater freedom of movement. If the fracture lies in the laminae of the dorsal or lumbar vertebrae, a molded splint of plaster on each side of the spinal column and connected by transverse bands above and below the lesion will be found a satisfactory way of immobilizing the fracture and preserving the normal outline of the spinous processes. Fracture of the vertebral body is best treated by overextension on a Bradford frame, which is much more comfortable and efficacious than a plaster jacket.

REPORT OF CASES

The following cases, some of which were seen with Dr. William Sharpe, are examples of extensive fractures of the spine following severe injuries, without cord signs:

Case 1.—A. M., man, aged 22, while employed as a bell boy in September, 1915, fell through the dome of a skylight, a distance of 18 feet, striking the floor on his head and shoulders. Unconscious and severely contused, he was taken to a hospital where a *diagnosis* was made of fractured skull; this was changed a few days later to cerebral contusion. The patient was unconscious for three days, and stuporous and dazed for two weeks. There were no signs of cord involvement present at any time. No operation was done, and he was discharged from the hospital "improved," but complaining of headache and pain in his back. When seen, two months later, his cerebral condition had almost entirely cleared up except for occasional dull headache. His chief complaint was pain and weakness in the back aggravated by standing or walking. This pain was severe enough to prevent his returning to work. Examination disclosed a projection backward of the spinous process of the eleventh dorsal vertebra and alteration of the normal spinal curve in this region. Roentgenoscopy revealed moderate crushing of the body of the eleventh dorsal vertebra and slight dislocation backward of this vertebra; the upper borders of the twelfth dorsal vertebral body were "lipped," and there was evidence of slight crushing of this vertebra also. The neurologic examination was negative. The tendon and skin reflexes were present and normal; there was no Babinski reflex, no ankle clonus, no sensory changes and no disturbance of the sphincters. A metal brace was applied, causing slight overextension of the spine at this point. When seen two years later, the patient was found to be normal except for some spinal rigidity at the dorsal lumbar junction and slight alteration of the normal spinal curve. From habit he was still wearing the brace, which he was advised to discard.

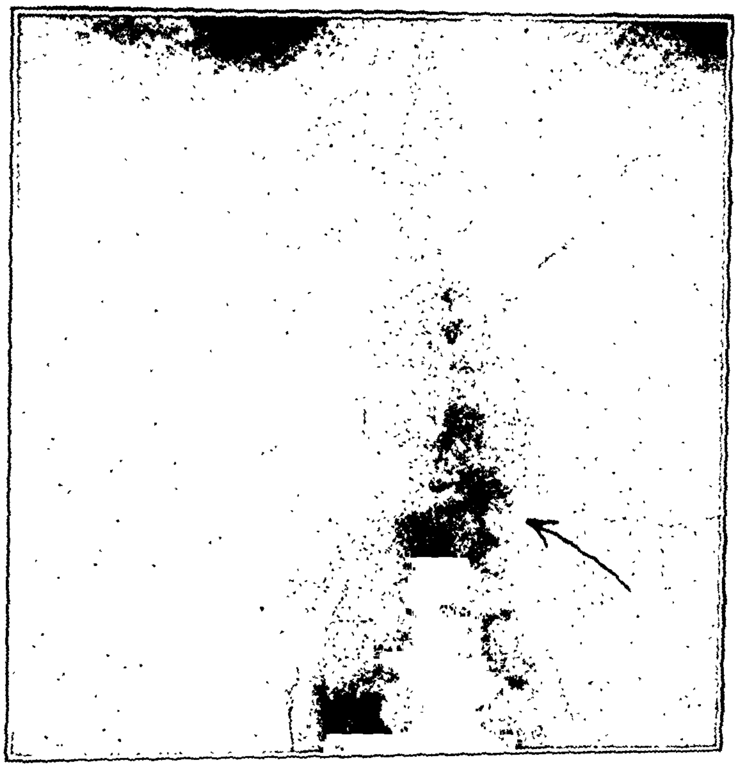

Fig. 5 (Case 5).—Fracture-dislocation of the fifth cervical vertebra.

Case 2.—R. H., a man, aged 20, while playing polo in October, 1915, was thrown from his horse, striking on his neck and shoulders. He was not unconscious, but complained of severe pain in the neck radiating to the back of the head. He was able to walk off the field. He remained in bed two days with severe pain in the neck. There was no radiation of pain in the arms and legs and no sphincteric disturbance. Two weeks later the lower tendon reflexes were found to be somewhat increased; there was no Babinski reflex; the abdominal reflexes were present and equal; there was no impairment of motility or of sensation in either the upper or the lower extremities. Roentgenoscopy (by Dr. Caldwell) revealed a fracture-dislocation of the sixth cervical vertebra with backward displacement of one-half inch. Naturally, in view of the fact that there were no signs of cord injury found, no operation was done, but the head and neck were placed in a plaster collar. The patient made an excellent recovery, so much so that in the following year he rowed on a 'varsity crew. There have been no complaints up to the present time.

Case 3.—S. B., a man, aged 30, in April, 1917, fell 40 feet from a window, first striking his back on a wooden railing 10 feet below the window, and then continuing to fall 30 feet, landing on a wooden floor on his left side. When he struck the railing he had severe pain, and says he "thought his back was broken." He was not unconscious and had no pain nor numbness in the legs. When lifted he was able to stand alone; he was taken to a hospital, where he was told that the injury to the back was a contusion. No roentgenogram was made. He had severe pain in the lumbar region and the left flank. There was no sphincter trouble, and he passed no blood. He was out of bed on the eleventh day, and left the hospital in two weeks. He was at home a week, in and out of bed, with severe pain in the back and some pain on the inner side of the left thigh. During this week he tried various "stunts to loosen up his back," getting down on the floor on his hands and knees and twisting about, kicking out with the feet, etc. This caused pain. Three weeks after the accident, examination revealed an alteration in the normal spinal curve at the dorsolumbar junction, a kyphosis, and protrusion of the spinous process of the first lumbar vertebra. Roentgenoscopy revealed marked crushing of the body of the first lumbar vertebra. There were no motor or sensory changes, and the reflexes were unaltered. There was some tenderness to pressure over the spine and marked tenderness in the left flank. The tenderness on the inner side of the left thigh disappeared the following week. The patient was placed on a Bradford frame with overextension of the spinal column for four weeks. When he left the hospital he was fitted with a steel brace, which he wore during the day for eight months. Examination nine months after the injury showed the spine strong and supple, with slight projection of the spinous process of the first lumbar vertebra. There were no root pains and no signs of motor or sensory involvement of the cord or roots.

Case 4.—C. P., a woman, aged 18, was trapped by fire on the fifth floor, in March, 1917. After clinging to the window-sill and being burned extensively on the arms and back, she fell and struck the middle of the back across an iron bar at the first story, and then fell to the ground. She was dazed but not unconscious, and after being lifted up could stand erect and move about. She was brought to the hospital in an ambulance. She complained of pain in the back at this time more than of the burns. There was no pain nor any numbness in the legs. The burns were treated and no attention was paid to the back. Thirty hours after the injury the temperature rose to 105 F. and fell shortly to 102; on the seventh day it was normal and continued so. The patient moved about in bed, but there was no weakness in the legs, though these movements caused pain. Three weeks later, because of the persistence of the pain, examination of the back was made and a protrusion found in the dorsolumbar region. Roentgenoscopy revealed marked crushing of the twelfth dorsal vertebra. Careful neurologic examination at this time showed no impairment of motility or sensation. The patient was placed on a Bradford frame in hyperextension, and the pain ceased in a day or two. After five weeks the patient was fitted with a rigid brace for the spine, which she wore for several months. Examination one year later showed her to be normal and able to work, and with no complaint.

Case 5.—H. B., a man, aged 47 years, while working as a ship rigger, in March, 1918, fell 35 feet and was unconscious for fifteen minutes. The right side of the head and face was badly cut and three ribs were broken, but his chief complaint was pain in the back of the neck. He was unable to turn his head in any direction on account of the pain in the neck. He was taken to a hospital, where he was told that his neck was sprained. He was twelve days in bed, being treated for the fractured ribs and other injuries, though his chief complaint was pain in the neck. No roentgenogram was taken at this time. Three weeks later, twenty-two days after the injury, the pain persisting, a roentgenogram was taken, which showed a dislocation backward of the fifth cervical vertebra with fracture of the body of the fourth cervical. Neurologic examination at this time was entirely negative. There was no impairment of motility or sensation and no alteration of the deep or superficial reflexes. The patient carried his head in a peculiar stiff manner, though he could move it without much discomfort. A plaster collar was applied and he is still under observation.

315 West Ninety-Seventh Street.

CANCER OF THE ORAL CAVITY, JAWS AND THROAT

TREATMENT BY ELECTROTHERMIC METHODS OR IN COMBINATION WITH SURGERY, THE ROENTGEN RAY AND RADIUM, WITH AN ANALYSIS OF TWO HUNDRED CASES SO TREATED *

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PHILADELPHIA

Electrothermic methods are peculiarly adapted to the treatment of cancer within the mouth. Malignant tissue (including bone) occurring in any part of the oral cavity, comprising the lips, buccal surface, tongue, floor of the mouth, alveolus, hard palate, antrum, tonsils, pharynx, epiglottis, larynx and proximal end of the esophagus, may be destroyed with one electrothermic operation.

It is not necessary to split the cheek surgically to render a growth accessible to treatment, since the exposure secured by the use of a mouth gag, cheek retractors, traction on tongue by means of a suture or tongue forceps, or by the use of an endoscope is sufficient to permit the destruction of a growth. A tongue may be coagulated to the base and then excised without hemorrhage.

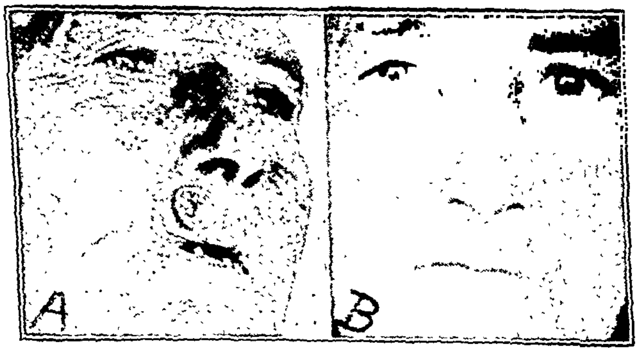

Fig. 1.—*A*, basal cell epithelioma of the upper lip in a woman, aged 72, referred by Dr. William Hamilton of Philadelphia. One desiccation treatment was given in September, 1914. *B*, result. Note absence of contracted scar. *No recurrence in nearly four years.*

In addition to the desiccation or coagulation of tissues and the sealing of blood and lymph channels, the heat penetrates beyond the area totally destroyed and devitalizes malignant cells without impairing the healthy tissue, thus lessening the likelihood of local recurrence or metastasis and conserving the maximal amount of normal tissue.

Blood vessels encountered in the oral cavity are blocked by the current, and secondary hemorrhage rarely occurs. The efficiency of electrothermic methods is increased in some cases by the judicious use of operative surgery, the roentgen ray and radium.

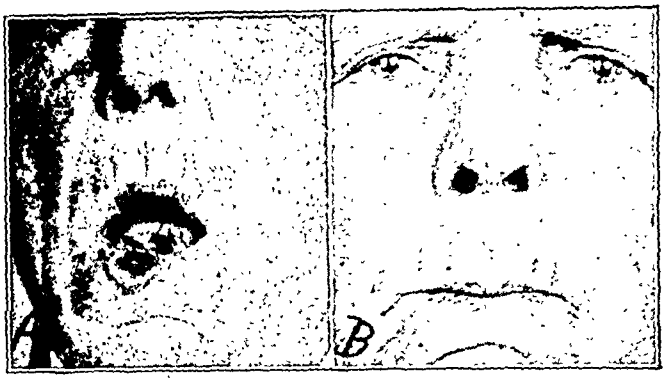

Fig. 2.—*A*, epithelioma of lower lip, a recurrence after surgical excision, in a man, aged 75, referred by Dr. Paul Cassidy of Philadelphia. One desiccation treatment under local anesthesia was given in April, 1915. *B*, result of treatment. Note absence of contracted scar and regeneration of lost tissue in lip. No recurrence in more than three years.

ELECTROTHERMIC METHODS

The methods to be considered are electrodesiccation and electrocoagulation. The desiccation method is one by means of which malignant growths of small or moderate size may be destroyed by the utilization of heat of just sufficient intensity to desiccate or dehydrate the tissues, and is produced by a monopolar high frequency current of the Oudin type, which is applied to the lesion by means of a steel needle or other pointed metallic applicator (usually steel knitting needles) which may be cut and curved, if necessary, to suit the case under treatment. The desiccation method is of advantage when the lesion is localized and a good cosmetic result is to be desired, and is subject to such control as to area and depth that a very small growth even on the cornea may be successfully treated without injury to vision, as may a growth on the vocal cords be destroyed without impairing phonation. The very slight trauma and absence of secondary inflammation probably explains the absence of scarring and the success obtained in treating delicate structures.

Electrocoagulation is produced by a bipolar high frequency current of the d'Arsonval type, is more penetrating and intense in action than the desiccation method, and is utilized to destroy large growths, including those that involve bone.

There are many variations of technic in the application of both methods to suit the requirements of the individual case, which need not be considered in detail here.[1] The heat from high frequency currents, unlike that from the thermocautery and galvanocautery, is not transmitted by contact, but is generated within the tissues by the resistance offered to the current. The cautery is comparatively superficial in action, while the high frequency current under proper conditions will penetrate and destroy tissue to any depth, in parallel or divergent lines, depending on the size and arrangement of the electrodes, and also the strength and quality of current, which are varied to suit indications.

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* Read before the Section on Stomatology at the Sixty-Ninth Annual Session of the American Medical Association, Chicago, June, 1918.

[1] Pfahler, G. E.: Electrothermic Coagulation and Roentgenotherapy in the Treatment of Malignant Disease, Surg., Gynec. and Obst., December, 1914. Clark, W. L.: Electrical Desiccation as an Adjunct to Surgery, with Special Reference to the Treatment of Cancer, ibid., August, 1912; The Desiccation Treatment of Congenital and New Growths of the Skin and Mucous Membranes, The Journal A. M. A., Sept. 12, 1914, p. 925; Electrothermic Methods in the Treatment of Rodent Ulcer, Urol. and Cutan. Rev., November, 1917.

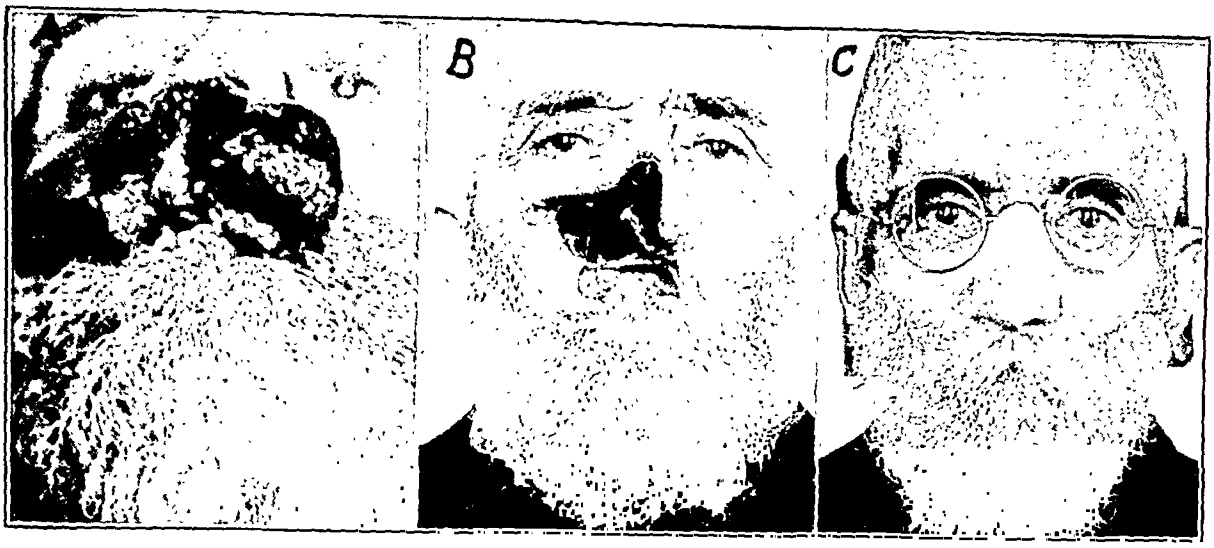

Fig. 3.—*A*, epithelioma involving upper lip, antrum, septum, nose, alveolus and hard palate, of three years' duration, in a man, aged 66, referred by Dr. J. D. Graber of Royersford, Pa. Previous treatment by plasters and the roentgen ray had been unsuccessful. The case was pronounced hopeless from a surgical standpoint by Dr. John Chalmers DaCosta of Philadelphia. One electrothermic coagulation treatment under ether anesthesia was given, March 1, 1916, and two slight recurrences were treated under local anesthesia by the desiccation method. *B*, final result, with no recurrence in two years and five months. *C*, reconstructed features by the sculpture method executed by Major R. Tait McKenzie of Philadelphia and Mrs. Alan Chesney of Baltimore. A plaster cast was made and the lost features built out in clay. A copper plate of suitable thickness was deposited on the cast by electrolysis and then silver plated. This plate was painted to match the tint of the skin, the mustache added and the plate attached to the rims of the glasses. A similar plate may be kept in place by means of spirit gum without the aid of the glass frames if desired. A plate is under construction to replace the hard palate and with artificial upper and lower teeth, in the hope that the patient may improve articulation and better masticate his food.

OPERATIVE SURGERY, THE ROENTGEN RAY AND RADIUM

When the antrum or other structures not easily accessible are involved, or when normal tissues cover the growths, operative surgery should be practiced as a preliminary to expose the lesion or to extirpate the gross mass of malignant tissue, followed immediately by the electrothermic treatment to check hemorrhage and to reach malignant tissue not possible to reach by the scalpel or bone-cutting instruments.

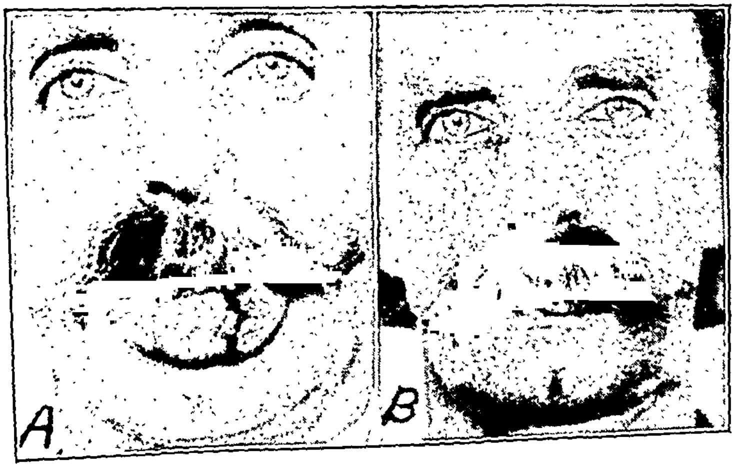

Fig. 4.—*A*, epithelioma involving the whole of the lower lip, in a man, aged 48, referred by Drs. G. C. Bird and J. F. Ulman of Philadelphia. One desiccation operation to the lip was performed under local anesthesia. *B*, result of desiccation treatment. Note absence of contracted cicatrix and regeneration of lost tissue. No recurrence in lip in four months.

When involved cervical glands are to be removed, excision must be practiced because it would be dangerous to work with the current near vital structures in the neck.

Before large growths at the base of the tongue, epiglottis, larynx or esophagus are treated, a tracheotomy should be done first and the larynx packed from below to prevent aspiration of toxic or other secretions. The ligation of the external carotid, and in rare instances the common carotid, may be practiced as preliminary to the treatment of some growths of the throat. Hemiplegia may occur, however, in the latter instance.

Deep, cross-fire roentgen therapy, according to standard technic, should be applied to the neck after dissection of the cervical glands, with the hope of preventing recurrence. When the glands are not involved, the roentgen ray should also be applied to them after electrothermic treatment of the primary lesion. The roentgen ray is of more value in the latter instance than in the former, as its use often prevents involvement of the glands, and when they are involved the roentgen ray will often retard the progress of the disease. Deep, cross-fire roentgen therapy may be used following electrothermic destruction at the site of the primary lesion to reach possible outlying cancer cells, as may radium, especially within the mouth; but the same area should never be treated by both the roentgen ray and radium. I have never seen any benefit result, however, from the use of the roentgen ray or radium alone in the treatment of cancer within the oral cavity, but the roentgen ray is of undoubted value as an adjunct to electrothermic methods and surgery.

CLINICAL OBSERVATIONS

Cancer of the mouth occurs more frequently in men than in women. The great majority of persons suffering from malignant lesions within the mouth have all their lives been insanitary or careless in the care of their mouth and teeth. Indifferent dental work or rough teeth causing continued irritation has been found to be a predisposing cause in many cases of mouth cancer, for the disease begins exactly at the site of the area which has been subject to a continued irritation.

Permanent bridge work and poorly fitting plates permitting the retention of food, and irritation to the gums are also factors in the development of malignant disease in the mouth. The removable bridge is best, and great care should be taken by dentists in properly fitting and adjusting plates.

Leukoplakia, papillomas, angiomas, chronic stomatitis, root abscesses and fistulas should be appropriately treated as a prophylactic measure against the development of malignant disease.

The irritation caused by excessive smoking is a contributory factor to the development of leukoplakia and mouth cancer, especially in those who fail to keep their mouth and teeth clean.

A striking number of mouth cancer patients are also syphilitic, and a combined tertiary lesion and cancer is not uncommon. This is true also of tuberculous lesions.

All papillomas or ulcers in the mouth showing a tendency to progress, unless the lesion is positively and purely syphilitic, should be treated just as though they were cancer, regardless of the pathologic finding, as all papillomas are potentially malignant.

A section should never be taken for pathologic examination except immediately before operation, if this seems necessary. A frozen section can be made and a diagnosis returned in ten minutes. By excising a piece of tissue for examination and waiting one or two weeks for a report, one will probably find that metastasis or rapid extension of the disease has taken place, owing to the opening of blood and lymph channels.

Before treatment is begun in any case of mouth cancer, a careful stereoscopic roentgenographic study should be made to detect possible bone or antrum involvement. Transillumination tests also should be made as a confirmatory diagnostic measure.

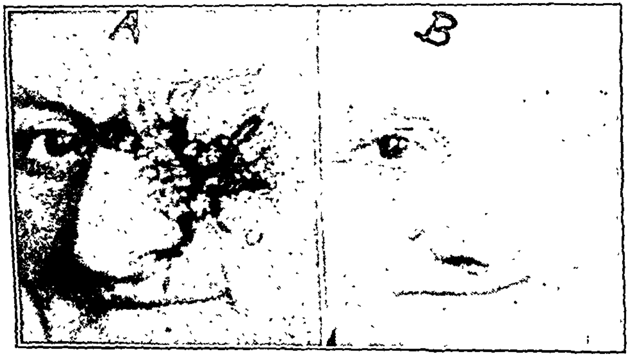

Fig. 5.—*A*, epithelioma involving nose, cheek, brow, eyelid, globe, and bones of orbit and antrum in a woman, aged 59, referred by Dr. T. L. Bradford of Philadelphia. Roentgen treatment had previously been used unsuccessfully. One intensive electrothermic coagulation treatment under ether anesthesia was given in March, 1917. *B*, result of one treatment. No recurrence in year and a half.

Success in the treatment of cancer is obtained only by absolute eradication of the last vestige of disease, else it will surely recur, and will progress more rapidly than if left alone.

Malignant lesions occurring in the mucous membranes are usually of the squamous cell type. They progress rapidly and metastasize early, in contradistinction to the basal cell or rodent ulcer type occurring on cutaneous surfaces, which progress slowly and seldom metastasize. If the mouth cases are localized and treated by electrothermic destruction and the cervical glands treated by the roentgen ray, a fair percentage of cases will be clinically cured.

The prognosis of cancer of the mouth with cervical glandular metastasis is always bad, no matter how early seen, yet a small percentage of patients recover after appropriate treatment, and it is worth while to attempt treatment when the glands are movable and not adherent. When the glands are adherent and other structures in the neck are involved, it is not worth while attempting treatment except for palliation. In early diagnosis and treatment lies the only hope.

Lip cases and small lesions within the mouth may be treated under local anesthesia; but if the lesion is advanced, general anesthesia should be employed to insure thorough destruction.

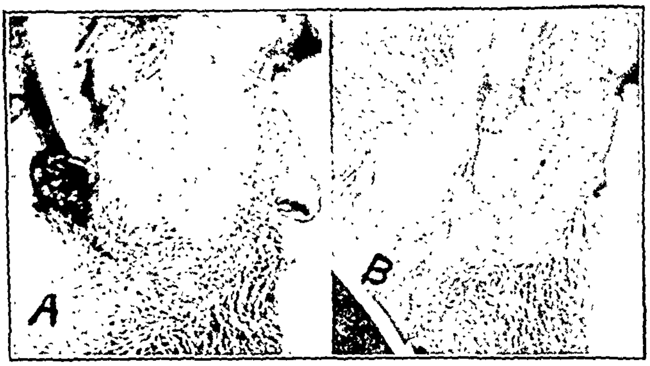

Fig. 6.—*A*, basal cell epithelioma, involving tissue and bone at angle of jaw, in a man, aged 73, referred by Dr. John Hedges of Philadelphia. The roentgen ray had previously been used without success. One desiccation treatment under local anesthesia was given in March, 1917. *B*, result of one treatment. Note absence of contracted scar. No recurrence in one year and a half.

ANALYSIS OF TWO HUNDRED CASES OF CANCER OF THE ORAL CAVITY, JAWS AND THROAT

Two hundred cases were treated by one or both of the electrothermic methods or in combination with surgery, the roentgen ray and radium. Surgery was used when the lesions were inaccessible to the current, when it required the incision of healthy tissue to expose the growth, or when it was necessary to excise the glands. In the majority of these cases the roentgen ray, radium or both had been used before without success, in which case these agents were not used again. When the roentgen ray or radium had not been employed before, one or both measures were used in combination with electrothermic methods, when judgment indicated the wisdom of so doing.

Two types of cases were selected for the series. First, those that were distinctly localized in which a guardedly favorable prognosis could be given, and second, those which had metastasized to the cervical glands, but the glands were movable and not adherent to the tissue of the neck, in which the prognosis was

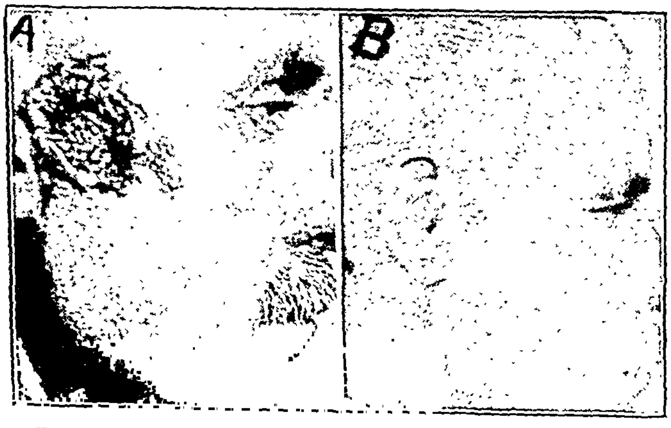

Fig. 7.—*A*, rodent ulcer involving bone of maxilla and mandible, of three years' duration, in a man, aged 50, referred by Dr. William H. Schmidt of Philadelphia. One electrothermic coagulation treatment was given under ether anesthesia in April, 1915. *B*, result. No local recurrence in eight months, when patient died with what was diagnosed as abscess of the brain by the attending physician, but which may have been metastasis.

unfavorable, but judgment indicated there was a chance of success if treated by combined measures.

Numerous other very advanced cases, in which the primary lesion was very extensive, with adherent metastatic glands, and involvement of other structures in the neck, were either declined as absolutely hopeless or else treated palliatively with no thought of cure, but sometimes to destroy a growth on the tongue or in the throat to ease temporarily the respiratory function or to render the intake of nourishment possible or more comfortable, and with the idea of alleviating pain and prolonging life.

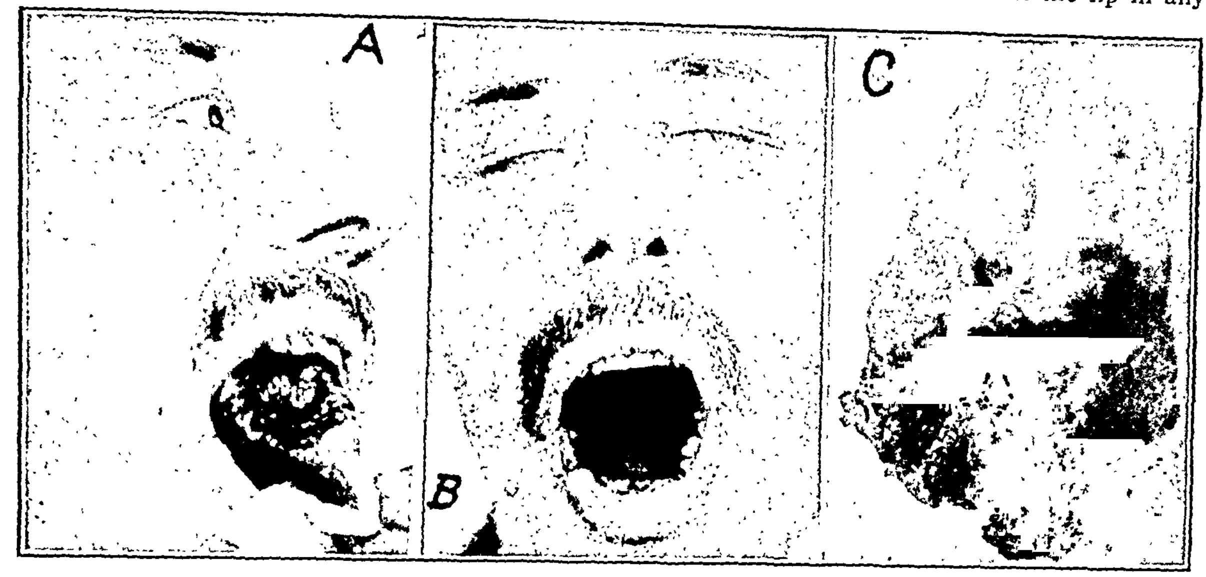

Fig. 8.—*A*, advanced squamous cell carcinoma of the tongue of four months' duration in a man, aged 46, referred by Drs. John B. Deaver and Walter Ziegler of Philadelphia. The cervical glands were involved and treated by the roentgen ray. The tongue was amputated at the line of the tonsils by the electrothermic coagulation method under general anesthesia, without hemorrhage. Little pain or discomfort followed the operation. *B*, result after electrothermic treatment. No local recurrence in two months. This photograph is shown to demonstrate the practicability of amputation of the tongue by the electrothermic method. *C*, tongue in another case immediately after amputation by this method. Note coagulated area at distal end.

The distribution of the cases treated and the results obtained are presented in the accompanying table. A brief outline is necessary to complete the presentation:

1. *Upper Lip.*—Localized: The nine cases of epithelioma of the upper lip, some of which were advanced, though without metastasis, were all treated once by the desiccation method, under procain-epinephrin anesthesia, and there has been no recurrence in from six months to four years.

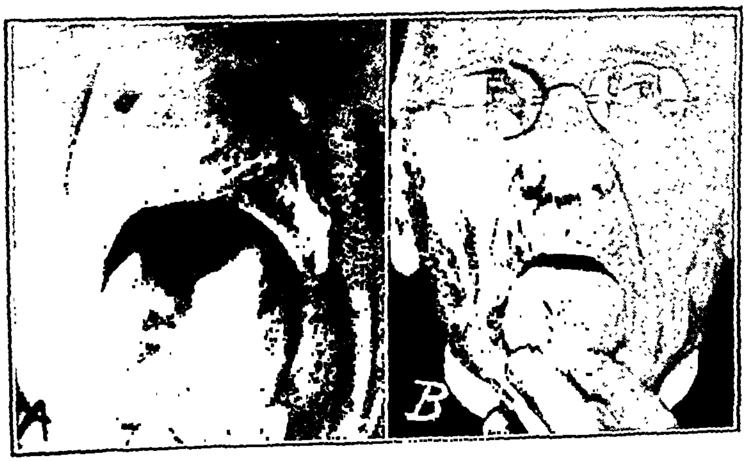

Fig. 9.—*A*, epithelioma of tongue of six months' duration in a man, aged 74, referred by Dr. J. C. Biddle of Fountain Springs, Pa. *B*, result of desiccation treatment under local anesthesia in May, 1911. There were enlarged glands on both sides of the neck in this case, which were probably inflammatory, since they disappeared after the treatment of the tongue lesion and the application of the roentgen ray to the neck. There was no recurrence in four and one-half years, when the patient died of some other disease.

2. *Lower Lip.*—Localized: The sixty-one localized lower lip cases were all treated under local anesthesia by the desiccation method. There has been no local recurrence in any case in from three months to eight years. In one case a cervical gland became involved two years after treatment of the lip and was excised by Dr. Charles Nassau of Philadelphia, with no recurrence in two years.

Metastasis: Of the three lower lip cases with glandular involvement, the primary lesion was treated by desiccation, and the glands were excised under the same anesthetization and the roentgen ray employed. There was no local recurrence in the lip in any case, but there was recurrence in the neck in two cases from which patients died. There was no recurrence in the third case either in lip or neck in two years.

3. *Alveolus* (*Upper Jaw*) *and Hard Palate.*—The thirteen cases involving the alveolus and hard palate were treated by the coagulation method under general anesthesia. In eight there was no recurrence in from three months to three years. Four recurred and were lost track of, while the other one is now under treatment again.

4. *Alveolus* (*Lower Jaw*) *and Floor of Mouth.*—Localized: Of the twelve localized alveolus and floor of mouth cases treated by electrocoagulation, six patients have remained well for periods of from three months to four years. Two had no local recurrence, but glands became involved, and four had both local recurrence and cervical metastasis.

CASES OF CANCER TREATED AND RESULTS OBTAINED

	Localized			Cervical Metastasis		
		Result			Result	
Anatomic Location	No.	No Recurrence	Recurrence	No.	No Recurrence	Recurrence
1. Upper lip	9	9	0	0	..	..
2. Lower lip	61	61	0	3	1	2
3. Alveolus (upper jaw) and hard palate...	13	8	5	0	0	0
4. Alveolus (lower jaw) and floor of mouth	12	6	6	10	1	9
5. Tongue	15	10	5	6	2	4
6. Buccal surface	14	8	6	7	0	7
7. Antrum	2	2	0	0	0	0
8. Tonsils	5	3	2	2	0	2
9. Pharynx	2	1	1	0	0	0
10. Epiglottis, larynx, base of tongue and esophagus	3	0	3	0	0	0
11. Advanced lesions involving several structures in mouth	13	5	8	23	5	18

Metastasis: Of the ten cases involving the alveolus and the floor of the mouth with metastasis, only one patient has remained free from recurrence, and he has been well three years. Three remained well for periods of from three months to one year, but finally there was recurrence in the neck. In the remaining six, recurrence followed in a short time, and were soon beyond the hope of benefit.

5. *Tongue.*—Localized: Of the fifteen localized tongue cases, seven were treated by the desiccation method under local anesthesia, and eight by the coagulation method under ether anesthesia. There was no recurrence in ten cases in from three months to five years. Two recurred locally, and the glands became involved. These patients were treated again, but unsuccessfully. In three there was no local recurrence, but the glands later became involved. These patients reported too late for further treatment.

Metastasis: The six tongue cases with cervical involvement were treated by combined coagulation, surgery or the roentgen ray. One patient remained well for four and one-half years, when he died of some stomach trouble (Fig. 9).

Another has been well two years. Two had no local recurrence, but there was recurrence in the neck, and two had recurrence both in the tongue and in the neck. They were not treated again.

6. *Buccal Surface.*—Localized: Of the fourteen buccal surface localized cases, eight patients have remained well after electrothermic treatment for periods ranging from four months to four years. The other six cases recurred either locally or the glands became involved, and they were not treated again.

Metastasis: Of the seven buccal surface cases with glandular involvement, all recurred either locally or in the neck, and soon were beyond hope.

7. *Antrum.*—The two antrum cases were treated first surgically and then by electrocoagulation. There was no recurrence in one case in fifteen months and in the other in two years.

8. *Tonsils.*—Localized: Of the five localized tonsil cases, three have not recurred in from one to two years. Two had local recurrence and the glands became involved and could not be treated again.

Metastasis: Both cases recurred locally in the neck and were not treated again.

9. *Pharynx.*—One case soon recurred locally, but the patient is well three months after a second treatment. The other recurred locally and involved structures that were inaccessible and could not be treated again.

10. *Epiglottis, Larynx, Base of Tongue and Esophagus.*—These three cases were all unsuccessful. One patient died of pneumonia a few days after treatment, probably owing to aspiration of secretions, a preliminary tracheotomy not having been performed. The second patient died of secondary hemorrhage two weeks later. There was recurrence in the third case, and a second operation was not attempted.

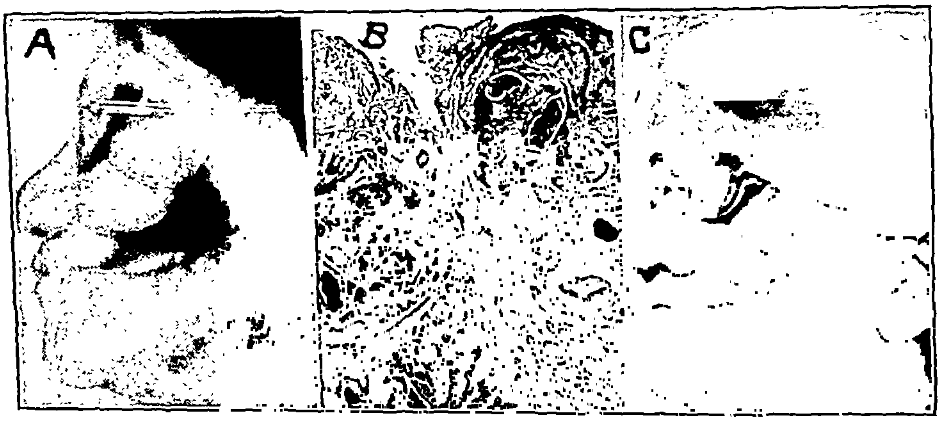

Fig. 10.—Squamous cell carcinoma involving antrum, alveolus, hard palate and buccal surface on left side in a woman, aged 60, referred by Dr. E. B. Miller of [illegible] involvement was extensive in this case and some of the diseased tissue was [illegible] surgical removal was done by Dr. G. M. Dorrance, followed immediately by [illegible]. *A*, result of this treatment. No recurrence in fifteen months; *B*, low power photomicrograph (showing prickle cells) on which diagnosis was based; *C*, result of plastic operation in which tissues were separated from bony attachments, and cheeks drawn together and sutured.

11. *Advanced Lesions Involving Several Structures in Mouth.*—Localized: Five of these thirteen patients have remained well for periods ranging from three months to two years. In the remaining eight cases there was local recurrence, and the glands became involved, rendering them hopeless.

Metastasis: Of these twenty-three cases, five remained free from recurrence from three months to one year. The others all recurred and soon were beyond hope of benefit.

When the lesions recur only locally, there is a chance of success if the patient is treated a second or, indeed, a number of times; but if there is recurrence in the glands of the neck, further treatment is usually of no avail.

The basal cell, or rodent ulcer, type of epitheliomas occurring on cutaneous surfaces, even though advanced and with bone involvement, is so satisfactorily treated by the desiccation and coagulation methods, that these lesions practically all recover when treated thoroughly.

It will be seen that the chances of success in cancer of the oral cavity vary with localization, the anatomic location and the presence or absence of glandular involvement.

The foregoing analysis of results obtained in 200 cases, and the illustrations, will serve to give an idea of the rôle the desiccation and electrothermic coagulation methods can be expected to play in the treatment of cancer of the oral cavity, jaws and throat, and in which types of cases the use of operative surgery, the roentgen ray and radium in combination is justifiable.

Medical Arts Building.

THE USE OF HEAT AND RADIUM IN THE TREATMENT OF CANCER OF THE JAWS AND CHEEKS*

G. B. NEW, M.D.
ROCHESTER, MINN.

Cancer of the jaws and cheeks is one of the most malignant forms of new growth. The type that is primary in the cheek is probably only exceeded in its malignancy by the melano-epithelioma. Little is known regarding the causation of such growths except that chronic irritation of some sort is believed to be an important factor, and, this being true, every snag of tooth or any other source of irritation should be eliminated from the mouth as a prophylactic measure. While tobacco may be a cause in some cases, it probably has not so much importance as is usually attributed to it. The man with cancer of the cheek who chews tobacco has, as a rule, carried the tobacco on the unaffected side of the mouth. Syphilis is undoubtedly a factor in the production of cancer of the tongue, but is of no demonstrable consequence in relation to cancer of the jaw and cheek. Papillary leukoplakia frequently develops into epithelioma, and it should be thoroughly treated with cautery and radium.

Fifty-seven cases of cancer of the jaws and cheeks were examined at the Mayo Clinic during 1917. Thirty-two of the patients were inoperable; four had glandular involvement, but operation was considered advisable and a block dissection was done in addition to the treatment of the local growth. Twenty-one had no glandular involvement and were treated with the cautery and radium. Data concerning these twenty-one patients form the basis of this paper. In most instances epitheliomas occurred in the fifth decade. There were two patients between 31 and 40 years of age; four between 41 and 50; twelve between 51 and 60, and three between 61 and 70. Nineteen were men and two were women. The patients had first noticed the trouble from two weeks to four years before they came for examination, but it was difficult to determine the length of time the growth had been present or active. The tumor was located on the lower jaw in two cases, on the lower jaw and cheek in seven, on the upper jaw in two, on the upper jaw and cheek in seven, and on the cheek in three. Five of the twenty-one patients had been operated on before coming to the clinic. Seven of the epitheliomas were associated with, and apparently had originated in, a leukoplakia. In one case, the tumor developed on a pathologic fracture of a bone cyst of the jaw.

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* From the Mayo Clinic.

* Read before the Section on Stomatology at the Sixty-Ninth Annual Session of the American Medical Association, Chicago, June, 1918.

TREATMENT

In reviewing the literature, it is seen that the usual method employed in the treatment of cancer of the jaws and cheeks has been a complete or partial resection of the jaw with some type of plastic operation if the growth involved the cheek. Recently the cautery has been used in the treatment, but I have been unable to find any report in the literature of a group of cases treated in this manner. At the Mayo Clinic the cautery has been employed for several years in the treatment of such cancers, with a few exceptions, in preference to resection of the jaws. In many instances, the radium has been used following the cautery.

During the year 1917, all the patients operated on were treated by the slow heat cautery with soldering irons, and, in addition, radium was used. While a report of recently treated cases of cancer must necessarily be only preliminary, nevertheless the results have been very encouraging, and I feel that we have obtained better immediate results than were obtained previously in the treatment of cases of this type.

In cases of cancer of the jaw or cheek without glandular involvement, the decision as to whether or not they are surgical depends on individual judgment, but in any questionable case the patient should be given the chance an operation may afford, and everything possible should be done for him.

Before operation, patients are advised that they must return for observation at least once a month during a period of six months or more following operation, so that they may have immediate care, if there is any recurrence. When the seriousness of the condition and the necessity for cooperation is explained, it is usually not difficult to get patients to return at stated intervals.

TECHNIC

After the patient is anesthetized with ether, a mouth gag is inserted opposite the affected side. The tongue is drawn to one side out of the way, by the aid of a stomach clicker. The water-cooled speculum is inserted, and all the teeth in the area involved, or those that prevent good exposure of the growth are removed. If it is possible, the entire growth is excised from the jaw or cheek with a knife cautery, and the base is cauterized with soldering irons. If this is not possible, the irons are inserted into the tumor. The water-cooled speculum prevents the burning of the lips or cheeks except in the area being treated, and it affords good exposure. A wooden tongue depressor holds the tongue out of the way and prevents it from being burned. The cautery should be used longer than seems really necessary; at least for from twenty to forty-five minutes. If the growth is in the upper jaw and involves the antrum, the soldering irons are carried up into the antrum and the entire growth is gradually burned away.

Soldering irons are found to be the most satisfactory type of cautery, as the heating element in the handle of the electric cautery usually interferes with a good view of the area that is being treated. If the irons are too hot, the surface cauterized becomes carbonized and prevents the penetration of the heat. A slow heat that gradually cooks the tumor is preferable.

Occasionally hemorrhage will occur during the first ten days or two weeks following the cauterization while the slough is clearing off and, if it is not readily controlled by packing, ligation of the external carotid with the lingual and facial branches is advisable.

About two weeks after the cauterization, most of the slough will have cleared off, and radium may be applied directly into this open area. It is directed into the ulcerating area on lead applicators, using a 50 or 100 mg. tube within a silver tube, for from fifteen to twenty hours, without screening. If the growth has involved the cheek, radium is applied with screening externally over the cheek, thus cross-firing. If the growth has involved the antrum, the radium is placed in the antrum, packed there with petrolatum gauze, and left in place for the period of hours required by the particular type of lesion.

In from a month to six weeks after the operation, large pieces of sequestrum usually come away from the jaw. These pieces are somtimes one-fourteenth to three-eighths inch thick. In a month from the time the first radium treatment is completed, further treatment is given and repeated as often as the condition indicates. If there is any recurrence noted a second cauterization is done, and this is followed by radium.

Epithelioma of the jaw does not, as a rule, metastasize early, unless there is considerable involvement of the cheek. In such a case, the submental and submaxillary glands on the affected side should be removed.

RESULTS

Of the twenty-one patients treated, twenty were traced; of these, fourteen have been free of local recurrence for from six to eighteen months. One patient recauterized three months previously, thus far has no recurrence. One died of lymphatic leukemia six months after operation; there was no recurrence. Two of the fourteen patients (one with epithelioma of the cheek and one with epithelioma of the upper jaw and cheek) have developed glands of the neck and have had block dissections. Thus twelve of the twenty patients have had no recurrence locally or in the glands for from six to eighteen months. One patient has a hopeless local recurrence. This patient was operated on before coming to the clinic. Two patients died of the cancer; one of these had been operated on before coming to the clinic; one consulted a plaster doctor, and his present condition cannot be learned from his letter. There was no operative mortality.

This group of cases shows that our immediate results in the treatment of epithelioma of the jaws and cheeks without glandular involvement, by the use of the cautery and radium, have been very encouraging. The end-results cannot be foreseen, but we believe that by the addition of radium to the treatment, much more is being accomplished than formerly.

ABSTRACT OF DISCUSSION

ON PAPERS OF DRS. CLARK AND NEW

Dr. A. J. Ochsner, Chicago: I am not familiar with this method. My observations are based entirely on the treatment of these growths with the actual cautery. I have used this method most successfully. Many of my patients remain well for many years following the use of the soldering iron, whereas if the same growth is removed by the electric cautery or even the Paquelin cautery the result is not so good. I believe that is due to the fact that the heat of the soldering iron penetrates deeper and produces more destruction at a distance from the point of application of the soldering iron. It is quite possible that Dr. Clark's method accomplishes the same thing and in a much nicer way than the soldering irons do. The mortality among these patients when operated on early is practically nil; when operated on late, death in the earlier group of cases was either from shock or from pneumonia. We thought that our successful cases depended on the fact that we destroyed the growths to a very great distance from the originating point and that we held the red hot soldering iron in position for a considerable period of time, that is, we do not brush it back and forth, because in that way you do not reach the depth, so that boiling of the tissues has seemed to be of especial value, and especially so in the cases that are seen early. Of course, these patients do not come to the general surgeon as early as they do to the dentist, so that it is rare that we see a real early case of malignant growth of the jaw. In the last three years we have used the roentgen ray in all cases and radium in a considerable number of cases. In the cases of circumscribed osteosarcomas we have excised the jaw. In the carcinomas we have not done this, but we have cauterized very deeply. In malignant polypus of the antrum we have found many cases that have been treated for a long time on the supposition that they were due to infection of the antrum, and the patients have come late for that reason. In cases of that kind, in which we removed the eye at the primary operation, we have had permanent results. In cases in which we have tried to save the eye we have not succeeded.

Dr. Bertha Van Hoosen, Chicago: For three years I have had encouraging results from the use of emetin in the treatment of malignant disease. I have never seen a case of malignant disease of the jaw where the patient did not have pyorrhea or badly diseased gums. Emetin seems to produce a fibrosis. I have at present two patients who, without any operation, are practically cured of malignant disease. One has a squamous cell carcinoma of the labia. The other has a very extensive medullary carcinomatosis and has made wonderful improvement.

It seems to me that in the inoperable cases Dr. Clark might succeed in localizing the disease and making the surrounding tissues more healthy, by starting up a fibrosis, using at least 5 grains of emetin the week before his treatment is begun. Thus he might make it successful in every case instead of the small percentage reported.

Dr. Robert Abbe, New York: It is not through the blood stream, except where the blood stream has been infected and the metastatic particles are carried in it, but through the lymph channels that we are bound to search for absorption. We have to reach the original infection, and heat, roentgen ray and radium seem to be the agents of choice. That the cells that are wandering away from the lymphatics are more sensitive than normal malignant cells has been proved by biologic study. By electronic action one can produce either a slight or a very marked arrest of growth, or a destruction of those cells. The heat method is one by which the cells in some denfiite area are arrested, destroyed or absorbed. The heat can be driven into these cells, if we go far enough. There is no question but that the lymphatics can be treated at a distance. In the cases of cancer of the mouth spoken of by Dr. New, it seems to me that the question of tobacco as a cause is absolutely proved in nine cases out of ten. If you ask the question of these patients you will find they have smoked to excess three to five cigars a day or a corresponding amount of tobacco in any form, and where the quid is carried in the cheek it is a cause of carcinoma of the buccal site. Dr. G. H. Davis proved that in the Philippines chewing of the Betel leaf was the cause of carcinoma of the inside of the mouth. I believe we can state that tobacco is the cause of most cases of carcinoma inside of the mouth.

Dr. William L. Clark, Philadelphia: The success obtained by the use of the desiccation and electrothermic coagulation methods in the treatment of cancer is explained by the fact that the malignant tissue was all destroyed, and when possible with one radical treatment, while at the same time blood and lymph channels were sealed. In cases in which, by error of judgment, some of the diseased tissue was not destroyed, recurrence was the rule; indeed, owing to the stimulation of the electric current, the disease often manifested greater activity than would have been the case if left untreated. In cases of recurrence, however, the electrothermic methods have often been applied twice, or even a number of times, before final success was attained, but the practice of intentionally treating a malignant lesion in a series of electrothermic operations is a reprehensible one, and must be discouraged in no uncertain manner. It is quite as irrational to do this as to excise a cancerous growth surgically in a series of operations with the hope of success. The term "fulguration" is applied in the United States to any type of high frequency spark that will cause the destruction or burning of tissue. Fulguration used in this sense is a misnomer, since the original deKeating-Hart fulguration method does not destroy tissue, but is applied to the field of operation after radical surgical ablation of cancer in the form of long high-tension sparks, not for the purpose of destroying tissue, but to alter local nutrition, and it is claimed by Hart, Bainbridge and other advocates, that recurrences are less frequent when fulguration is used in combination with surgery, than when surgery is used alone. I have had insufficient experience with this method to venture any comment on the truth or fallacy of this claim. I may say, however, that the pseudofulguration method employed in this country means little, as the destruction or burning of tissue by any sort of high frequency spark whatsoever is called "fulguration," hence, in the hands of different men, entirely different effects on the tissues may be produced.

The indiscriminate use of the high frequency spark in the treatment of cancer by frequent applications and incomplete destruction has justly brought the destructive fulguration method into disrepute. The term fulguration should be abandoned, except when used according to the technic of deKeating-Hart. On the other hand, desiccation and electrothermic coagulation are descriptive of the actual effects on the tissues, and these effects are produced by definite types of high tension electric currents of known strength, capacity, inductance and resistance, and the methods are so standardized that they may be duplicated over and over again by any physician possessing the requisite appliances and who has learned how to use them.

It is also desirable that the operator should have a good surgical training and a comprehensive knowledge of anatomy.

Dr. Gordon B. New, Rochester, Minn.: In regard to the point concerning tobacco that Dr. Abbe has brought up: Too much stress has been put on the effect of tobacco as a cause of cancers of the mouth and lip, although undoubtedly there are a large number of cases of cancer in which tobacco is a factor. Among 196 patients with epitheliomas of the lip treated at the Mayo Clinic during the past twelve months, 33 per cent. did not use tobacco at all. Since this is about the percentage of men who do not smoke, it does not bear out the high percentage of cases in which tobacco is a factor.

Cold Conduces to Shock.—Exposure to cold has a marked effect in inducing or augmenting the state of shock. A badly wounded man leaves the front-line trenches in a fair condition, but during his journey to the rear he loses heat by sweating and exposure, and then passes into the shocked state. His condition is likely to be much improved when he is placed in a warm bed and supplied with sufficient heat to restore his normal temperature. It seems probable that cold, which is known to cause stagnation of blood capillaries, increases the "lost blood" by helping to induce capillary stagnation.—*Review of War Surgery and Medicine.*

TREATMENT OF VERTEBRAL TUBERCULOSIS BY FUSION OPERATION

REPORT OF TWO HUNDRED AND TEN CASES *

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In these 210 cases of vertebral tuberculosis, the patients were operated on at the New York Orthopedic Hospital in the period of January, 1911, to January, 1915, so that at this date, June, 1918, seven years have elapsed since the earliest and three and one-half years since the latest patient was operated on. This is a sufficient length of time to make possible a fair estimate of the influence of the operation on the course of the disease.

The operation was designed and its technic perfected with the single object of eliminating motion of the diseased articulations, experience having proved that the limited motion obtained by various mechanical means, such as braces, corsets, etc., was beneficial. It was felt that absolute elimination would hasten the cure and perhaps prevent deformity. The absolute elimination of motion in any joint is accomplished only when the bones entering into its formation become fused. This is possible only when all tissue other than osseous is removed or destroyed from between their articular ends and new bone formation fills the gap. This is sometimes accomplished by nature without operative aid. In the case of a vertebral joint affected by tuberculosis, however, nature is too slow. The spinous processes, laminae and lateral articulations are rarely involved. Their easy accessibility and close approximation make them peculiarly well adapted for operative fusion.

OPERATION

An incision is made through the skin and subcutaneous tissue from above downward over the spinous processes of the segment to be fused, exposing the tips. The periosteum over the tips of the first two spines above is split and the interspinous ligament between. With a periosteal elevator these are bared of periosteum for about one half their length. Small packs of gauze are now inserted to prevent oozing. The periosteum of each tip and the interspinous ligament between is split in turn, and the periosteum is freed from the bone and treated as described and so on including each vertebra to be fused.

Beginning at the upper end again, with a dull periosteal elevator for children, and a sharp one for adults, the operator separates the periosteum farther forward from the spinous processes and laminae to the base of the transverse processes, exposing the lateral articulation. Each vertebra is treated in this manner from above downward and packings inserted as noted. These packs are very important, as they keep the operative field dry.

Beginning at the upper end again with a small curet, the operator curets the lateral articulations and removes the periosteum and ligament from the adjacent edges of the laminae and bases of the spinous processes. This is done with each vertebra in turn over the entire field, with packs inserted as described.

Beginning at the upper end again with a small chisel, the operator elevates a piece of bone from each lamina and turns it from above downward, its free end resting on the one next below. Each in turn is so treated with packings inserted afterward.

With the operator beginning at the upper end again with a bone forceps, each spinous process is carefully cut and fractured, so that its tip rests on the bare bone next below. The periosteum and ligament which have been split and pushed to either side and lie in practically an unbroken sheet, are brought together in the middle and sutured with interrupted sutures of ten-day chromic catgut. The subcutaneous tissue is closed by a continuous suture of plain catgut. The skin wound is closed with a continuous suture of ten-day chromic catgut. Sterile dressings are applied and an immobilizing brace.

Summary: All tissue other than osseous has been removed from between the lateral articulations, the laminae and the spinous processes, and bone contact is secured at the lateral articulations, the laminae and the spinous processes, so that with the periosteum closed, we have practically a tube of periosteum filled with live, healthy bone, lying in continuous contact and insuring a perfect fusion.

Great care should be exercised in the removal of all tissue from the bones, as the area of fusion will be determined absolutely by the thoroughness and extent of the dissection. If the dissection is made subperiosteally, there is absolutely no difficulty from hemorrhage, and the whole operation may be done with practically a dry field.

The number of vertebrae to be fused in each case is determined by the extent of the disease. Great care should be exercised that two healthy vertebrae are included at either end. As will be seen later on, in some cases a sufficient number of vertebrae were not included, and it became necessary to perform a second operation.

The patient is kept quiet in bed for eight weeks after the operation and continues to wear a brace for from six months to a year. The form of brace used is the Taylor model, because it is accurate, and is the most efficient means of securing immobilization after operation. It is always fitted to the patient before operation, and is, therefore, perfectly comfortable.

In this group of cases, there has been no operative mortality and all the wounds have healed by first intention. There has been practically no shock in any case.

In dealing with these patients, we have always had in mind the fact that they were suffering from tuberculosis, and, when possible, every influence, such as good food and good air, has been brought to bear on them. An attempt has been made to keep every patient under constant observation, and in most instances this has been done by the visiting nurses and our dispensary department. The patients all come from among the poorer classes and most of them live in crowded tenements.

No attempt has been made to select cases. Every patient with Pott's disease who would consent to operation and whose general condition warranted the administration of an anesthetic, was operated on, regardless of other complications or the extent of the disease. I believed that the operation would hasten the cure of many and for those in whom cure could not be expected, it would at least contribute to their comfort. Most of these patients had had some form of brace or jacket treatment before operation.

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* Read before the Section on Orthopedic Surgery at the Sixty-Ninth Annual Session of the American Medical Association, Chicago, June, 1918.

RESULTS OF OPERATIONS

The first patient was operated on Jan. 9, 1911, and during the intervening period 210 patients have been operated on. One hundred and fifty-seven, or 74.7 per cent., were cured. Twenty-two cases are doubtful cures, and thirty-one patients are dead. In the classification of the cured cases, every one concerning which there is the slightest doubt has been excluded and only those included which show no evidence of disease, as determined by the most careful examination, with complete knowledge of their history since operation. The patients have all been examined by the staff working as a group within the past month. Photographic, roentgen-ray and tracing records have been made of every case before operation and at frequent intervals since, and it is felt that among all those recording deformity, the most reliable records are carefully made tracings. The results are set forth in the accompanying tables.

In many of these cases, a definite fusion of the bodies also was shown by the roentgen ray. This would be expected only in the articulations of which the cartilage had been destroyed by disease.

Deformity.—In 139 cases there was no increase in deformity. In eighteen cases there was definite increase. In all cases, there is an amount of diminution in the deformity from the operation, which is due to a transposition of the spinous processes. This is of some importance to the patient.

TABLE 1.—AGE OF PATIENTS AT TIME OF OPERATION

No. Cases	Age*	No. Cases	Age*
2	between 1 and 2 years	6	between 15 and 20 years
27	between 2 and 4 years	5	between 20 and 30 years
22	between 4 and 6 years	3	between 30 and 40 years
47	between 6 and 10 years	2	between 40 and 50 years
43	between 10 and 15 years		

*The average age was 14 years plus.

TABLE 2.—DURATION OF DISEASE AT TIME OF OPERATION

No. Years*	No. Cases	No. Years*	No. Cases
Less than 1 year	38	From 6 to 10 years	28
From 1 to 2 years	17	From 10 to 15 years	18
From 2 to 4 years	30	From 15 to 20 years	1
From 4 to 6 years	25		

*The average duration of disease at the time of operation was 4.6 years.

No attempt has been made to correct deformity by the exercise of force at the operation. The definite increase of deformity in these eighteen cases is certainly not due to destruction of bone, therefore it must be due to a developmental change, as they were all cases of disease among growing children.

Every patient in this group is living the normal life fitted to his age, either at school or at work.

There were five deaths of patients who were definitely cured of Pott's disease; two of these died of heart disease and three of pneumonia. These cases could be fairly classified as cured, but they are not included in the 157 cases.

Doubtful Cures.—There were twenty-two doubtful cures. These include every case in which the patient is not now in good condition, whether the local disease seemed cured or not, and also include two cases which had disease of the laminae at the time of the operation.

Three of these patients now have active lung tuberculosis. Two others are in school wearing braces. Two have remained paralyzed, although the fusion is complete and there is no evidence of active disease. In one case, the fusion is complete but the patient is not doing well. Three other patients are still under treatment and doing well, and the remainder have not been seen recently.

Patients Who Have Died, and Causes of Death.—Of the thirty-one who are dead, twenty-six patients were definitely not cured. All but five, however, improved to a considerable degree for a time after operation. One worked a while, and seven went to school. The cause of death in thirteen cases was miliary tuberculosis. The average age of the patients was 6.7 years. The average duration of disease before operation was 3.8 years. The average time that elapsed after operation was 2.4 years. Four of the thirteen patients were in fairly good condition before operation, and nine were in poor condition. Fusion was perfect in all but three cases. One of these had a pseudarthrosis, and in two cases the fusion was short. In one, a necropsy was done and the fusion was found complete but short.

TABLE 3.—NUMBER OF VERTEBRAE INVOLVED.

No. Cases	No. Vertebrae	No. Cases	No. Vertebrae
19	2	14	7
35	3	7	8
23	4	3	9
32	5	2	10
20	6	1	11

TABLE 4.—REGION OF DISEASE INVOLVED

Cervicodorsal	6	Lumbar	28
Dorsal	71	Lumbosacral	2
Dorsolumbar	50		

Five patients died of tuberculous meningitis. The average age of these patients was 7.6 years. The average duration of disease before operation was 3.9 years. The average time elapsed after operation was 1.3 years. One of the five patients was in fair condition before operation, and four were in poor condition. The fusion was complete in all but one case, and in that it was too short.

Four patients died of pulmonary tuberculosis. The average age of these patients was 12.7 years. The average duration of the disease before operation was 8.1 years. The average time which had elapsed after operation was 2.6 years. All were in poor condition before operation. The fusions were complete.

Three patients died of pneumonia. The average age of the patients was 5.3 years. The average duration of disease before operation was 2.5 years. The average time that had elapsed after operation was four years. All were in good condition and the fusions perfect.

TABLE 5.—GENERAL CONDITION OF PATIENTS BEFORE OPERATION

Condition	No.	Condition	No.	Condition	No.
Poor	54	Fair	66	Good	37

TABLE 6.—DURATION OF TIME SINCE OPERATION

Time Elapsed,* Years	No. Cases	Time Elapsed,* Years	No. Cases
3½ to 4	40	6	51
5	46	7	20

*The average time was 5 years plus.

Three patients died of amyloidosis. The average age of these patients was 4.3 years. The average duration of disease before operation was 1.5 years. The average time which had elapsed after operation was 3.3 years. All were in poor condition at the time of operation. The fusions were complete. Two had abscesses which discharged until death. One closed before death.

Two patients died of heart disease. Their average age was 11½ years. The average duration of the Pott's disease before operation was six years. The average time which had elapsed after operation was four years. One was in good condition and the other in fair condition before operation. Fusion was complete in both cases.

One patient, aged 2 years, died of septic meningitis, following mastoid operation. The duration of Pott's disease before the operation was one year, and after operation, three years. The condition was good and the fusion perfect.

One died of miliary tuberculosis eight weeks after operation. This patient was in very poor condition before operation, having a large psoas abscess and pulmonary involvement. Three vertebrae were involved in the disease which had had a duration of one year. Necropsy showed a perfect fusion.

One other patient died of miliary tuberculosis four months after operation. This patient was also in very poor condition before operation. The duration of the disease had been one year and three vertebrae were involved. Two patients died six months after operation. One had tuberculous meningitis, and the other miliary tuberculosis. The remaining cases go to make up the general average of three years.

It will be interesting to note that the general average life of the patients who died after operation was three years, and it seems fair to suppose the operation may have prolonged their lives as it certainly contributed to their comfort.

Patients Still Living But Not Cured.—There are five patients living who are definitely not cured. Three have disease of the sacrum and two have fusions which are too short. Two of the sacral patients probably had the disease before operation as the fifth lumbar was partially destroyed, suggesting that the first sacral region was involved. According to our records, the third case showed involvement which included only the third lumbar region. Fusion was made to the fifth and symptoms did not clear up, so it is probable that the sacrum was involved at the time of the operation.

Patients with More than One Focus of Disease.—Three patients each had a double focus. One had both foci in the dorsal region, two had a focus each in the dorsal and the lumbar, and one developed a second focus in the lumbar region following operation for a focus in the dorsal. In two of the cases, both foci were included in the first operation, and the third patient was reoperated on for the second focus. Two of the patients were among the definitely cured. One is among the doubtful.

Cases Showing Cord Pressure Symptoms.—Of the total number of patients, thirty-five showed cord pressure symptoms. Of these twenty-six were completely paralyzed, and nine slightly spastic, with exaggerated reflexes. One was in the cervicodorsal region, twenty-two in the dorsal, eleven in the dorsolumbar, and one in the lumbar. Thirty of these cases were completely cured of their paralysis and Pott's disease, and are included among the cured cases. Of the five remaining, two are living and apparently cured of the disease, although still paralyzed. Three of them are dead, one of whom developed paralysis after operation, was reoperated on and died of amyloidosis. The other two died of miliary tuberculosis. Two of the dead had disease in the dorsal region, and the other in the lumbar. Of the two living, one patient had disease in the dorsal and the other in the dorsolumbar region. The existence of paralysis is obviously no contraindication to operation.

Cases of Psoas Abscesses.—There were sixty-seven patients who had psoas abscesses. In fifty-six cases, the abscesses were single, and in eleven cases they were double. Twenty-three patients had dorsal disease, twenty-six had dorsolumbar, and seventeen lumbar. One had disease in the lumbosacral region.

Of these, forty-two patients were cured of the abscess, eleven of them being affected in the dorsal region, seventeen in the dorsolumbar, and twelve in the lumbar. Eight of the abscesses were double and thirty-six single.

Twenty-five patients were not cured. Ten were affected in the dorsal, nine in the dorsolumbar, five in the lumbar, and one in the lumbosacral region. In four cases in which the abscesses were double, one patient died of pulmonary tuberculosis, and three are among the doubtful cases. Nineteen were single. Ten of the single cases are among those classified as dead, and five among those classified as doubtful. Four patients remained the same.

The existence of abscess, whether open or closed, is no contraindication to operation, provided it is not in the field of operation.

Cases Complicated by Tuberculosis of Other Joints.—There were twenty-one cases complicated by tuberculosis of other joints. One patient had tuberculosis of the elbow, knee, and ankle. Pott's disease was apparently cured but the case is classified among the doubtful, the other joints being active. Three had involvement of the hip. One in whom the hip was not cured is classified among the doubtful. In the other two cases the hips were cured as well as the Pott's disease.

Twelve patients had knee joint involvement. In three patients the knees were not cured and in nine they were cured. In one case the disease developed after operation, the patient dying of miliary tuberculosis. In the other eleven cases, the Pott's disease was definitely cured and the patients are classified among the cured.

Two patients had involvement of the ankle. In one the ankle was cured and in the other it was not. In both cases the Pott's disease seemed cured, but only one is classified as such.

There were three cases of shoulder joint involvement. In neither patient was the shoulder cured, but in both, the Pott's disease was definitely cured and is so classified.

One patient had disease of the sternum. The Pott's disease was definitely cured and is so classified. The sternum was practically cured.

Cases of Fusion Found at Operation.—In thirty-four cases fusion of vertebrae was found at operation. The age of the patients in three cases was from 3 to 6 years; in ten cases from 6 to 9 years, in five cases from 9 to 12 years, in thirteen cases from 12 to 15 years, and in three cases more than 15 years. Four patients had dorsolumbar disease, six had lumbar, twenty-three dorsal, and one cervicodorsal. The duration of the disease at the time of operation was less than one year in two cases, from one to four years in two cases, from four to ten years in twenty-two cases; from ten to twenty years in eight cases. In five cases, fusion was found to include all the diseased vertebrae. In three of these cases, the disease was dorsal, in one dorsolumbar, and in one lumbar. From two to eight vertebrae were involved. In eight cases fusion was found to include two vertebrae, in ten cases it included three, in two cases it included four, and in five cases it included five. In two cases six were included, in one case seven, and in another nine. Thirty of these patients are in excellent condition. One is in poor condition and is classified as not cured. Two have been lost track of, and another is still receiving treatment. These last three are classified as doubtful.

Postoperative Deformities.—In considering this aspect of the cases, we must remember that the transposition of the spinous processes immediately lessens the deformity in all cases. In seventeen of the cases, however, deformity has decreased more than can be explained by this fact. Six of these cases were in the lumbar region, and although the patients had definite deformity at the time of operation, they have absolutely none now. In 141 cases the deformity remained the same or was slightly less.

In thirty-six cases there was an increase of deformity. There was a slight increase in twenty-four of these cases. In fifteen of the twenty-four patients, the fusion was apparently short, though nine of the patients were definitely cured, and are so classified. Two of the nine were explored and the fusion found complete. One of the fifteen died of miliary tuberculosis. Three others were reoperated on, the fusion was extended and the symptoms subsided. The patients are classified as cured. The other two had disease of the laminae. The disease is probably still active and the cases are classified as doubtful. Nine patients showed a slight increase in deformity, although fusion was apparently complete. They are well and in school and classified as cured.

In twelve of the thirty-six patients, there was a marked increase in deformity. In eight the fusion was too short and in four there was a pseudarthrosis. Of these patients in whom the fusion was too short, five were reoperated on, and there has been no increase since. Of the remaining three, one is in bad shape and refuses reoperation. The other two were taken from the operating table without completion of the operative work. Both died later of miliary tuberculosis. In the four cases of pseudarthrosis, three of the patients were reoperated on and cured. The fourth was reoperated on but died later of amyloidosis.

A study of the region involved in these cases shows that nineteen were in the dorsal region, ten cases in the dorsolumbar, and three in the lumbar. Of the dorsolumbar cases three included involvement of the two lumbar vertebrae. The remaining seven included only the first. Two of the pseudarthroses were in the dorsal and two in the dorsolumbar. Those in the dorsolumbar region included involvement only of the first lumbar.

Eighty-three per cent. of the 210 cases showed less deformity or no increase.

Seventeen per cent. of the 210 showed an increase of deformity. Fifteen per cent. of these had fused areas that were too short and in 2 per cent. there was a failure of fusion at one point as evidenced by pseudarthrosis.

Results of Fusion Operation Where Duration of Disease Was Less Than Six Months.—It must be considered here, as in all the cases, that the parent's history as to duration is not entirely reliable. There were seventeen cases. Thirteen patients are now in excellent condition although two had to be reoperated on for a short fusion. One was in excellent condition before he died of pneumonia. One we are unable to trace but was in fair condition when last seen. One is dead of miliary tuberculosis. One now has definite sacral disease. This gives a percentage of 82 cures as compared with the general average percentage of 75. It will be noted that eight of these seventeen patients had symptoms of cord pressure. All were cured. It is also interesting to note that one patient had a vertebral involvement of four. Eight cases had three, and eight had two vertebrae involved.

Patients in Very Poor Condition Before Operation.—In the 210 cases there were eighty-seven in poor condition before operation. Fifty-three of these are now in good condition and considered cured. Twenty are dead, two from pneumonia, both of whom were in good condition before death. Six have been lost track of. Two had pulmonary tuberculosis before operation and the disease is still active. Two are not in very good condition although one has apparently a perfect fusion and the other has a fusion that is short. One patient is still paralyzed but is in good condition. He is not considered cured. One has hip disease, and while the Pott's disease is apparently cured, it is not so considered. One has active disease of the sacrum and is counted among those not cured. The last one has heart disease, having been cured of Pott's disease.

Miscellaneous.—There were five patients with disease of the spinous processes and laminae. Two of these patients were affected in the dorsolumbar region. One of them is dead of miliary tuberculosis, with incomplete fusion, and the other is in good shape and has a perfect fusion. The other three patients were affected in the dorsal region. One patient is in fairly good condition with complete fusion. Another shows increased deformity and is not improved. The third has a short fusion. Only two of the patients are considered cured.

It is interesting to note here that disease of the spinous processes and laminae does not always prevent their fusion.

Patients Who Had Bone Graft.—Three patients in the series had had previous bone graft operations at other hospitals, one of which was done in the dorsal region, and the other two in the dorsolumbar. There was no fusion in any case, and all the patients had symptoms of active disease, one with six discharging sinuses from two psoas abscesses. In two cases, there was only a small piece of bone of the graft remaining in one spinous process. In one case there was a thin piece of continuous bone in the tips of three spinous processes. Perfect fusion was obtained in all three cases and the patients are among the cured.

The average age of patients of the whole group at the date of operation was 8.9 years. The average duration of disease before operation was 4.4 years.

CONCLUSION

This study gives convincing evidence that by this operation a fusion of the vertebrae may be obtained in every case in which a careful dissection is made, as in only four cases has fusion failed to take place at one point in the operated area, and in these it was undoubtedly due to imperfect operative technic. It seems equally convincing that the effect of fusion on these cases has been to hasten the cure of the dis-case and to limit the progress of the deformity. If this can be accomplished in a series of patients who had had the disease for an average of 4.4 years at the time of operation, is it not fair to conclude that had they been operated on earlier in the disease their cures would have been quicker and the deformity less, and does it not suggest that all cases of vertebral tuberculosis in any region of the spine should have a fusion operation at the earliest possible moment?

ABSTRACT OF DISCUSSION

Dr. Charles M. Jacobs, Chicago: I have operated in only two cases of tuberculous spine disease by what I believed to be the Hibbs method. It then occurred to me that either there was something radically wrong with the method or with my technic. I went to New York, unfortunately finding Dr. Hibbs suffering from an attack of lumbago, and therefore was unable to see him operate. His assistant told me that to get an accurate idea of the technic of this operation it is necessary to see Dr. Hibbs operate, as there is as much difference between his "description of the operation and his technic as there is between darkness and daylight." Probably this is the reason why the Hibbs operation is not performed more often.

My surgical experience in tuberculous spine disease is based on the bone transplantation method. There can be no doubt that surgical measures for tuberculous spine disease are a great advance over conservative treatment, but they should be restricted to selected cases. Undoubtedly they shorten the period of disability. My own private patients seldom are operated on, because I believe that in children the length of time necessary to a cure plays no important part. If, however, treatment must be carried on beyond the average time, which is about four years, or if deformity continues to increase, then I advise operative procedure. My clinical patients are practically all subjected to operation, because they must regain health in the shortest possible time; therefore, conservative treatment in their case demands a sacrifice justified only by a necessity which I consider no longer exists.

In Dr. Hibbs' series of 210 cases taken from the New York Orthopedic Hospital and Dispensary, which, of course, are the poor class of patients, 157 patients were cured; in thirty-five cases there was paralysis and in a certain number cold abscesses occurred. Following his operation he stated that a brace was applied. I did not hear him state in what period of time a cure occurred, or how long the brace was applied.

I should like to ask Dr. Hibbs whether he operates in all cases of tuberculous spines—on private as well as dispensary patients—also, what effect his operation has on paralysis and abscesses. We know that children who are suffering from Pott's paraplegia usually get well on a Bradford frame without operation in an average period of one year.

Dr. Willis C. Campbell, Memphis, Tenn.: I have done only two of these operations. The trouble is in not seeing the operation after reading the description. It really is a difficult procedure, and one in which it is necessary to see the actual work before you can thoroughly understand it. One of my patients was a very poor risk, being quite old, and after operation I learned that he was a morphin habitué. He died of sepsis, of course, through no fault of the operation. In the other case, the laminae were diseased, also the spinous processes. In that case I obtained a good result. A plaster cast was applied and was worn six months. The patient has been without it now for over a year, without recurrence of symptoms. Of course, I do not class that patient as cured, because there has not been sufficient time.

There are five points of fusion in the Hibbs operation. I have often heard it said that the spinous processes will not unite; but even if they do not, there are the laminae on both sides, making two other points, and the articular processes, so that we have a chance of fusion at five points, with little chance of failure, if the work is done accurately.

Dr. Fred J. Gaenslen, Milwaukee: Dr. Hibbs mentioned that in a number of his cases the lessening of the deformity was greater than he could account for by the deflection of the posterior spinous process. I should like to know whether he thinks that growth was responsible for this improved appearance.

Dr. Henry B. Thomas, Chicago: I have had a number of tuberculous spine cases in which I have operated according to the Hibbs method, guided by what Hibbs had written. I did not know his method thoroughly until I actually watched him operate. Now, after I have carefully studied nature's cure of tuberculous spines when not aided by operation, and seen in the skeleton how ankylosis probably began first around the laminae and the bases and tips of the spinous processes, and last about the necrotic bodies, I am convinced that what Dr. Hibbs does in his operation, in twenty or thirty minutes, is to prepare the field, the normal neighboring bone, for ankylosis, exactly as nature prepares it after the bodies of the vertebrae have given way so much by the decay as to allow the posterior parts of the spinal column to drop down so that they can rub off their periosteum and prepare for ankylosis. This is the beginning of fixation. Hibbs advocates a preparation in a few minutes' time which nature would require a year or so to complete. There is no doubt the first ankylosis which takes place is between good bone around the laminae posterior processes and in the articular processes. After nature gets that fixation by means of the good bone and removes the debris from the decayed bodies, these then, after a year or two, ankylose. In my judgment, if we have an operable case of Pott's disease, the Hibbs method is preferred.

Dr. Russell A. Hibbs, New York: In the first place, as to the question of whether the advice that I have given to the hospital patients applies to my private patients, let me say with all the emphasis possible, Yes. I have not a single private case of Pott's disease under my care today that has not been operated on in this way, and I do not want one. As to the effect of the operation on paralysis, of course, the operation, as such, has no effect on paralysis. The only effect it has is by its curative effect, if it has any, on the active tuberculous disease of the vertebrae. The operation has but one object, and that is the elimination of motion; and if by that it hastens the cure of the disease, it also hastens the cure of the paralysis and every other symptom of the disease; and if it does not hasten that, it does not hasten any of these things.

I have waited this long time before making a report of this work because it takes so long to see the final results, and only by and study of the final results can any fair estimate be made of the value of the operation.

Railroads and Malaria in the South.—R. C. Derivaux, of the United States Public Health Service, in *Public Health Reports,* Aug. 2, 1918, discusses the relation of the railroads in the South to the prevalence of malaria and its control. He shows that the railroads of the South have in many instances not only contributed to the spread of malaria by the promotion of conditions along the right-of-way which have fostered mosquito breeding, but they have also suffered economically from the morbidity from malaria among their employees. Recognizing this fact, many of the railroads have begun efforts to improve conditions in this respect. The St. Louis and South Western Railroad has taken up the matter of malaria prevention, and already has accomplished considerable in this direction. It was found that about 25 per cent. of all admissions to the hospital at Texarkana were for malaria. An average of 640 patients were treated for five days each year during the past four years. This was equivalent to about 4 per cent. of the total number of employees. Efforts at prevention were begun in 1917 at certain points along the line. In 1916, thirty-two malaria patients were admitted to the hospital at Texarkana; in 1917, following malaria work, only thirteen patients were admitted, a reduction of 59.4 per cent. The sale of quinin had decreased about 49 per cent. Among bridge and building gangs, whose bunk cars were screened, a reduction of 47.7 per cent. was obtained in the number of cases of malaria in 1917 over 1916. At one point in a small lumber community where malaria had been severe, after one year of work practically no malaria occurred, and the mill increased its output 20 per cent.

STATE RESPONSIBILITY AND AIMS IN COUNTY HEALTH WORK*

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It is plain that most of the relations and responsibilities of states to counties are very different from the relations and responsibilities of the national government to states. In comparing national and state reciprocal responsibilities, therefore, we shall probably not find any facts or considerations to aid us. As counties are decreed, defined and empowered by states, we perforce recognize that state responsibilities are fundamental, and aims must be on high levels, not only in the matter of health, but in all ways.

Under our democratic form of government, the state should have a wise general health law, clearly prescribing duties and powers that counties should have for doing successful public health work. But the utmost possible freedom should be accorded to enable the inhabitants of counties to work out their own salvation according to their abilities. It would be necessary, for a state health law to secure live, progressive counties against the stupidity, blunders or inaction of those that might be slow or retrogressive. In other words, state responsibility requires that, under carefully defined conditions, the central power may proclaim for a county what is reasonable and necessary to protect the reasonable rights of other counties. All of this would truly be making democracy safe for the world, which is the first step in making the world safe for democracy. I believe the North Carolina health law very fully recognizes these principles, and under the present direction is achieving excellent results.

As speeding up is sometimes not only desirable but also necessary, I would consider it a responsibility for most states to command that counties or groups of counties should employ skilled all-time health officers, should follow a uniform outline or procedure in public health work, should give a fair living compensation, and provide a reasonable health fund, leaving open every reasonable opportunity for individual initiative. If these fundamentals are not secured, lopsided work for the whole state area would most probably result, and a state map showing results might be as spotted as a leopard.

It is not enough that, for their health work, counties should be held accountable only to themselves; the state, therefore, should command an accounting because of state responsiblity. This accords with the accepted principle that "No man can live by himself alone." Undoubtedly, very full initiative and freedom should be accorded, but the limitations outlined are responsibilities which states surely carry.

I believe that a state's responsibility extends to providing for sloughing off incompetency in county officialdom, and therefore, if a county does not slough off its incompetent officials, then the state should attend to this important matter, which is essential to all successful government. Again, it is necessary that health officials, as well as all other officials, should keep up with the times. Present day statesmanship, therefore, recognizes as the first requirement of progress a constant reexamination of the entire structure of government to see if its fundamentals are correct and if the various parts are doing the work assigned to them. Perhaps we heard in years past too much of freedom and liberty and independence, and not enough about fulfilment of duty and obligation of service. These momentous days have brought quickly the lessons of mutual dependence, and they must instil the idea of discipline.

Still, that is not enough. To a new degree we must be interested in each other. The parents who raise a family of sturdy defenders of the nation will be assured that other parents are doing as much, so that their own labor will not have been in vain.

These general thoughts have application to a set of facts brought to light in the public health administration of Ohio outside of the larger cities. The state health authorities say it is almost worse than nothing in rural districts, and the same authorities of Indiana have testified to almost like effect as to the same conditions in that state.

This is a new offense to be charged to the rural districts whose representatives are constantly ready to represent the cities as centers of evil. Perils of typhoid and other infections, perils of child neglect and of blighting disease, certainly come in no small degree from the country to the city. Here is a state responsibility in county health work. The larger cities are keenly interested in their health departments and in having trained health officials, and city people now loudly demand the ministrations of hygiene. On the other hand, it has been shown that the administrative health positions in the county areas go to those who have done political work or who are appointed because of political affiliations. It is plain that the larger cities with lower morbidity and mortality rates and better care of infants and children will not long submit to surrounding unhygienic conditions.

A method of this character cannot endure, and the wildest dream of liberty would not wish its continuance. Rural domination over cities has long been submitted to, but now things have come to such a pass that for self-protection in health affairs, cities will have an interest in and insist on better rural hygiene. Likewise, it is time to do away with a system that does harm to both city and country.

If counties will not, after instruction, do that which is necessary for their own and their neighbors' health and comfort, then it will be the state's *responsibility* to take up the work.

As to state aims in county health work, it has already been said that aims must be high and noble. The first principle is that the people must secure better health and still better health, mostly through individual hygiene. The submerged, the almost submerged, and those whose heads just protrude above the flood of incompetence and ignorance, *must* be forced to be virtuous and to keep in the narrow path of health. Those who are only waist deep in the same flood may be instructed and led, and those who ride on the flood will be doers, instructors and leaders. The strong man does not need looking after, for he looks after himself and others. At the same time the strong man is to blame for the ills of society, for he is the only hope for their prevention. And let us note here that custodial care of the victims of the neglect of hygiene will not make health for a people. The state aims in county health work are the same as for everywhere else, namely, to cease the fostering of the production of low-grade nonresisting stock, for the individuals of such stock cannot learn and will not conform to the laws of their well being.

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* Read before the Section on Preventive Medicine and Public Health at the Sixty-Ninth Annual Session of the American Medical Association, Chicago, June, 1918.

ABSTRACT OF DISCUSSION

Captain Réné Sand, Belgium: One of the principal effects of the war is to have demonstrated to the authorities and to the nation at large how desirable, useful and even indispensable public health work is. Of course, I consider the problem differently from what you do because you have immediate necessities and we, in Belgium, look forward only to the situation as it will be after the war. Therefore our views are necessarily more general. After the war we will have to enlist in the public health service every physician of the country. I do not know, of course, exactly what the situation is here, but I think that finally if you consider every phase of the problem the best way to have good health service, to have hygiene entering into every household, would be to make every doctor in the country, at least every doctor who is willing to do so, an agent of the public health service and to give him some remuneration for his services. We see in our country, and it is the same in France and other continental countries, a certain amount I would not say of diffidence, but nevertheless the public health service goes along more or less indifferently with the general practitioner, while if you would put the general practitioner in direct touch with the public health service, give him a great amount of information, call him to meetings with the public health officials and give him a scientific, a civic and also a pecuniary interest in the work, I think you would have a much greater spreading effect than by many other methods. In some of your states you have a sort of house to house visit in order to convince the citizens of the necessity of improving the health of their dwellings and their general habits. Who can do that better than the general practitioner? If you ask him to do that for every one of his patients he will tell you he has not the time to do it, that he must earn his living. If you interest him by giving him some remuneration, then, of course, his argument will fall and he will be your helper. I think the two great defects of actual medical practice are, first, that the practitioner is able in many cases to have the experts at his disposition and, second, that we have not the organization at present on the large scale that it should be.

Mr. F. L. Hoffman, Newark, N. J.: The question which has been raised by Captain Sand of the Belgian Industrial Commission is indeed a most important as well as practical one to the American people at the present time. It is quite probable that one of the unforeseen consequences of the war will be a restored Belgium, in which all matters of health and medical administration will be raised to a standard such as has heretofore been considered unattainable. The new Belgium will be confronted by the imperative necessity for the practically immediate solution of health problems which have given us such serious concern during recent years. New diseases will have been introduced in consequence of the war, not the last and least of which, malaria, may prove a future health problem of sufficient importance to demand the introduction of preventive measures, which have been found so successful in this and other countries where the disease prevails to a more or less serious degree. Belgium before the war had a reasonably satisfactory public health administration, but it is probably a foregone conclusion that with a depleted medical staff and diminished financial resources, a most rigid economy will be necessary in the medical and institutional care of the Belgian people. It is, therefore, quite readily conceivable that some plan of coordinated state health and medical administration may come into existence, under which the large majority of the people will be provided for as regards their medical and surgical needs at minimum expense. In England a similar tendency has developed in consequence of the war and urgent demands are being made for a ministry of health with its functions intelligently coordinated to the needs of the people for adequate and efficient medical and institutional treatment at minimum cost. Such a system of state medicine is, however, a question of taxation and not of insurance. The paramount duty is to eliminate at the outset all unnecessary bureaucratic organizations which have so largely become the means or methods of oppression and ruthless government control in the German empire. First and last, however, the question is one of prevention rather than of treatment and cure. It is to be hoped that Belgium will be the first nation after the war to establish a really efficient state health administration, having for its main purpose the prevention of any and all diseases, as well as physical defects and deformities, which can be dealt with rationally and effectively by the state. It would be a calamity if such a worthy purpose were to be interfered with, or perhaps partially defeated by a continued imitation of the German fallacy of compulsory insurance. The more thoroughly the details of this aspect of the question are inquired into by those qualified to do so, the more convincing the conclusion that the problem is one of efficient administration on the one hand, and of equitable taxation on the other, and neither by direction or indirection one of insurance in the accepted sense of the term.

Dr. James A. Hayne, Columbia, S. C.: In 1878 we endeavored in South Carolina to have the entire medical profession interested in public health work. We created a state board of health and that state board of health is the South Carolina Medical Association. It has about 700 members, practically every worth-while doctor in South Carolina. Our legislators at that time thought that that would certainly interest all the medical profession of the state in public health work, and it not only did that but it read into the constitution of the state these words, that the State Board of Health of South Carolina shall be the sole advisors of the citizens of the state in matters pertaining to health. It put the responsibility where it belongs, on the medical profession, and put the advice-giving authority where it belongs, with the medical profession. Of course, since that time a great many other agencies have sprung up to give advice to the people on public health that are not always confined to the medical profession. Whether they give good advice or not is a matter of a great deal of difference of opinion. In regard to state medicine the only opportunity I ever had to study that was when I was on the Isthmus of Panama where every doctor was employed by the United States government, and he was assigned to a certain district. A certain force was assigned to that district. Any visit made by the doctor was paid for by the United States government. The person he visited, if he was not an employee, signed a receipt for that visit. The money was collected out of that man's salary, and not paid to the physician who made the visit but it was paid back into the engineering fund to help the building of the canal. Now, you may say that the physician did not care whether he visited the patient or not or whether the patient got well or not, because the doctor got nothing more for it if he paid the patient ten visits than if he paid him one, so he would neglect his patients by paying only one visit. There was a check on that, however. Each district had to report to the chief sanitary officer every morning showing the health conditions in that district for the previous twenty-four hours, and if there was an increase of any disease, he was immediately called on the telephone to know why his district had gone above the normal rate. He was told that if he could not correct those conditions to ask for aid from the chief sanitary officer and help would be sent him and in that way the normal of disease or average amount of disease in his district would be kept down.

Results of the Children's Year Program in California.—In the weighing and measuring drive of the Children's Year national program in California, in June and July, between 40,000 and 50,000 record cards were distributed, and to September, 1918, 40,863 of these had been returned to the state chairman of the Children's Year Committee. These report on children of less than 6 years of age and it is said more are to be received. In a tabulated statement in the *California State Journal of Medicine* for September, 1918, Dr. Adelaide Brown, San Francisco, chairman of the committee, shows that of the total number of records received 32,167 have been analyzed. The number of children who had tonsils and adenoids requiring operation was 10,133, or 31 per cent. The total number of defects of all characters was 15,261, or 47 per cent. Of the 29,917 cards tabulated for height and weight, the number of children below normal height and weight was 8,731, or 29 per cent. The total for defective teeth was 1,678, or 6 per cent., of the 27,407 cards analyzed in that study.

Clinical Notes, Suggestions, and New Instruments

THE USE OF OXALATED AND CITRATED BLOOD FOR ROUTINE CLASS STUDY*

Frederick Howard Falls, M.S., M.D., Chicago

The problem of presenting to students various pathologic blood specimens in connection with clinical laboratory work is often one of considerable difficulty. This is especially true of colleges which have a small teaching hospital or none at all, or which are far removed from the large medical centers. Ideally, of course, each student should come in contact with the various diseases studied and observe the blood picture in connection with the other symptoms of the disease. Even in the more fortunately located institutions with attached teaching hospitals, it is sometimes impossible to bring the students in contact with the patients having blood diseases, because of the size of the classes and because of the inconvenience afforded to patients who may be severely sick at the time of the examination.

These objections have been met in the past by obtaining blood smears in the usual way and passing them out stained or unstained to the student, or by means of loan collections owned and cared for by the department. Obviously a complete blood examination including red and white counts and hemoglobin estimation is impossible under these conditions. Besides, the student is deprived of the opportunity to make smears personally, which is an important technical point in routine blood examination.

Failing the ideal bedside study of the blood picture, an approximation may be sought by furnishing the blood to the student for examination in practically the same condition that it exists in the patient so that he can make his various smears and dilutions at some distance from the case. This can be very satisfactorily met by the following simple procedure: A few crystals of sodium citrate or sodium oxalate are placed in a 10 c.c. Lüer syringe, and blood is withdrawn from the median basilic vein in the usual manner. On entering the barrel of the syringe the blood plasma dissolves the citrate, and this effectually prevents the clotting of the blood. The blood is then blown out into sterile tubes and kept in a cool place until ready for use. Blood may be kept for hours by this method without undergoing any appreciable change either in its cell count or in the staining reactions of the individual cells.

The blood is then studied in the routine way that the student has used in the study of normal blood, and such details as concern symptoms, the diagnostic significance of the blood picture or any others which in the opinion of the instructor will add to the value of the exercise are added.

By this method I have studied specimens from cases of pernicious anemia, leukemia, lymphatic and myelogenous, malaria, trichinosis, secondary anemia, and cases with varying grades of leukocytosis.

Red and white counts and hemoglobin estimations have been made both before and after treating the blood with oxalate. Differential counts were made on stained smears from oxalated or citrated blood, and no differences in the staining properties could be detected. One point is to be noted in making red and white counts: On standing even for a few minutes, there is a marked tendency for the corpuscles to settle out of the citrated plasma. If then a blood count pipet is introduced into the tube and blood from the upper layer is taken, the count will be found to be less than that of the uncitrated blood of the same patient. If, on the other hand, the pipet is introduced to the bottom of the tube, the blood count will be found to be above normal. It is necessary, therefore, to shake up the citrated blood thoroughly, immediately before making a red or white blood count, in order to get a uniform admixture of cells and to estimate the true number per cubic millimeter.

It is considered advisable to use the crystals rather than solutions of sodium oxalate or citrate in order to minimize the changes in the quantitative determinations due to dilution of the sample, especially in making the red and white counts.

CONCLUSIONS

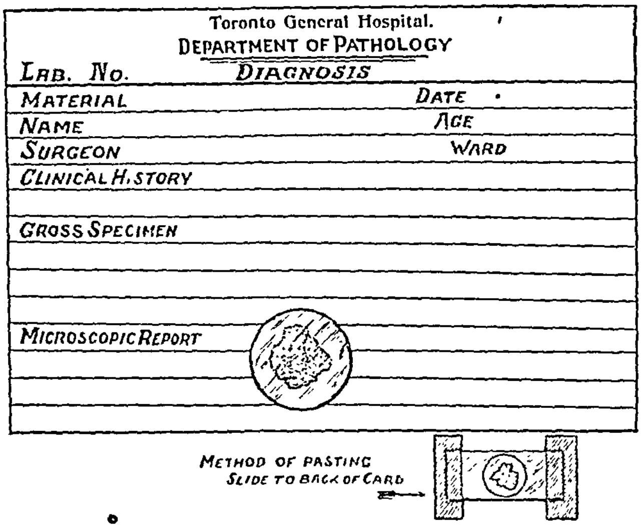
1. The use of oxalated or citrated blood for routine class study is practical and desirable.
2. No differences in staining reactions or in making red or white blood counts could be detected when using oxalated or citrated blood as compared with normal fresh blood.
3. These conclusions hold for the pathologic blood studied as well as for normal blood.

A CONVENIENT METHOD FOR FILING SURGICAL SECTIONS*

W. L. Robinson, B.A., M.B., Toronto

We have experienced considerable difficulty in keeping our surgical sections properly filed in such manner that they might at all times be readily accessible, and at the same time have proper notes filed with them which could be indexed and cross-indexed.

The filing of the sections in one set of drawers and the cards, with notes on these sections, in other drawers is not only an inconvenience but also involves unnecessary work. To obviate this we have mounted the section on the back of the filing card, in which a hole has been punched, to enable one to examine the section under the microscope while it is still attached to the card. An ordinary filing card, 4 by 6 inches, is used, and a hole seven-eighths inch in diameter is made with a steel punch in the center of the lower margin. The section is then pasted to the back of the card with cover-slip side toward, and just under, the hole with two short pieces of passe-partout seven-eighths inch wide. This will hold the section firmly to the card, and it can be handled freely without danger of detaching the section.



Toronto General Hospital.
DEPARTMENT OF PATHOLOGY
LAB. NO. DIAGNOSIS
MATERIAL DATE
NAME AGE
SURGEON WARD
CLINICAL HISTORY
GROSS SPECIMEN
MICROSCOPIC REPORT

Filing card with section.

MODE OF PROCEDURE

One of these cards is filled out and the specimen given a serial number just as soon as it is brought to the laboratory. A synopsis of the clinical history is written and a gross description made. When the section is through, the technician pastes it on the back of this card, using blank cards for any extra sections there might be. They are then brought in for histologic description and diagnosis. A complete report is made out from this, in triplicate, by the stenographer. The cards with sections attached are then filed, according to serial number, in ordinary filing cabinets. One copy of the report is then filed alphabetically in our laboratory, with cross-index

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* From the Departments of Pathology and Bacteriology and of Obstetrics, University of Illinois College of Medicine.

* From the Department of Pathology, Toronto General Hospital.

ABSTRACT OF DISCUSSION

Captain René Sand, Belgium: One of the principal effects of the war is to have demonstrated to the authorities and to the nation at large how desirable, useful and even indispensable public health work is. Of course, I consider the problem differently from what you do because you have immediate necessities and we, in Belgium, look forward only to the situation as it will be after the war. Therefore our views are necessarily more general. After the war we will have to enlist in the public health service every physician of the country. I do not know, of course, exactly what the situation is here, but I think that finally if you consider every phase of the problem the best way to have good health service, to have hygiene entering into every household, would be to make every doctor in the country, at least every doctor who is willing to do so, an agent of the public health service and to give him some remuneration for his services. We see in our country, and it is the same in France and other continental countries, a certain amount I would not say of diffidence, but nevertheless the public health service goes along more or less indifferently with the general practitioner, while if you would put the general practitioner in direct touch with the public health service, give him a great amount of information, call him to meetings with the public health officials and give him a scientific, a civic and also a pecuniary interest in the work, I think you would have a much greater spreading effect than by many other methods. In some of your states you have a sort of house to house visit in order to convince the citizens of the necessity of improving the health of their dwellings and their general habits. Who can do that better than the general practitioner? If you ask him to do that for every one of his patients he will tell you he has not the time to do it, that he must earn his living. If you interest him by giving him some remuneration, then, of course, his argument will fall and he will be your helper. I think the two great defects of actual medical practice are, first, that the practitioner is able in many cases to have the experts at his disposition and, second, that we have not the organization at present on the large scale that it should be.

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Laparotomy was decided on. At 10 p. m. Dr. Joseph W. McGill operated under ether anesthesia. A 4-inch incision was made outside of the right rectus muscle, liver or intestinal injury as well as perirenal trouble being suspected. Free blood, containing many large clots, was present in the abdominal cavity. Examination of the bladder, intestines and liver disclosed nothing. The posterior peritoneum of the right side was raised by the pressure of the blood and was loosely applied to the parietes. In the region of the cecum the posterior peritoneum was bulging over a large hematoma. Above this point there was a tear in the peritoneum.

After palpation of both kidneys, and swabbing out the major portion of the blood from the general abdominal cavity, the peritoneum of the right posterior wall was stitched in place and the abdomen closed, one drain being directed through a stab incision in the right lower quadrant to the retroperitoneal area, and the peritoneum sutured around it. The pelvis also was drained.

After operation the temperature rose slightly, reaching 102.6 on the following day. The urinary findings were still negative. On the sixth day after operation, after both drain tubes had been withdrawn, the pathologic report on the urine indicated some microscopic blood present in the sample. Macroscopic blood was noted the following day. The amount of blood increased daily until, on the tenth day after operation, the urinary specimen showed a large proportion of blood. The blood content then gradually decreased until the specimen was reported as negative on the twenty-second day. Hexamethylenamin was given in 3-grain doses on the first day of urinary signs, and was continued until the report was returned negative. The hematuria was not considered to warrant operation, as it was assumed that the contusion or laceration would heal spontaneously. A subsequent true nephritis was not considered probable in the prognosis.

The child coughed a little on entrance to the hospital, and the suggestion was made that this might be attributed to diaphragmatic irritation. This cough disappeared without special treatment during the stay in the hospital. The child sat up in a chair on the twenty-fourth day; was pushing herself around the ward in a wheel chair on the twenty-sixth day, and was up and around on the twenty-eighth day after operation. Since discharge the child has been doing well and no complications have been reported.

ACUTE POISONING BY FIVE GRAINS OF ACETYLSALICYLIC ACID—"ASPIRIN"

Edmund P. Shelby, M.D., New York
Attending Physician, City Hospital

The following report shows that some persons are peculiarly susceptible to the effect of acetylsalicylic acid—"aspirin":

Miss A., a strong, vigorous woman, aged 32, weighing 140 pounds, consulted me about indefinite pains in the back and chest which followed a slight sore throat. I prescribed aspirin in 5-grain capsules. The first capsule, of the Bayer brand of acetylsalicylic acid, was taken at 12:15. Forty-five minutes later the patient felt an itching of the scalp, swelling of the hands, and white blotches appeared over the face and body. In a few minutes the eyes were swollen and closed and violent irritation of the larynx set in.

I was hastily summoned and found the patient unable to speak and with marked interference with breathing. The face was hardly recognizable, and the obstruction of the larynx was very alarming. The pulse was rapid and the breathing spasmodic. The question of tracheotomy for the relief of the laryngeal obstruction was considered.

Before my arrival the patient had taken half an ounce of Epsom salt. This soon brought on nausea and a small amount of liquid was vomited, after which the patient fainted. On her return to consciousness the rash began to fade, the breathing became less labored, and the swelling of the eyes subsided. By 3 o'clock, two hours and forty minutes from the time she had taken the acetylsalicylic acid, the patient was fairly comfortable, could open her eyes and speak. At that time the temperature was 98.6, respiration 20, pulse 92. A rapid return to normal followed. The next day no ill effects were apparent.

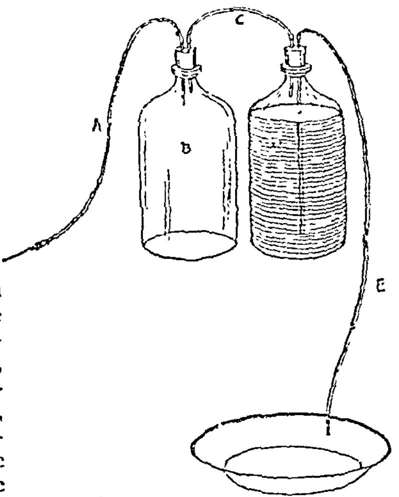
That these symptoms were caused by the acetylsalicylic acid there can be no doubt, as the patient had not partaken of food or of other medicine since the night before. Unusual susceptibility to the action of salicylates has often been noted, but I do not recall a case in which so small a dose has produced such marked symptoms.

116 West Seventy-Fourth Street.

AN ASPIRATOR FOR PARACENTESIS

H. C. Stevens, M.D., Dunning, Ill.

Many forms of apparatus have been devised to create a vacuum sufficient to withdraw fluid from the pleural cavities. The Pétain system is effective when the parts are new. It has the disadvantage characteristic of all complicated mechanisms of easily getting out of order. The two chief difficulties, aside from expense, which we have experienced have been (1) in the valves of the pump, which have failed to close properly, and (2) in leakage about the hard rubber stopper of the bottle. The latter trouble is probably due to changes in the rubber incident to age. To obviate these difficulties, we have devised a simple apparatus which produces suction by means of a siphon. Any hospital possessing two 2-liter bottles, two two-way rubber stoppers, some glass tubing and rubber tubing can assemble an effective aspirator in a very short time. The construction is shown in the drawing. A 2-liter bottle, provided with a two-way rubber stopper, is filled with water and serves as the siphon. In the illustration, *D*, with the tube, *E*, performs this function. A similar bottle, *B*, is sterilized by boiling, together with the tubes *A* and *C*. Bottle *B* is used to collect the effusion. Rubber tubing with an inside diameter of 4 mm. is used. A blunt trocar with a sharp obturator, or a smaller steel needle may be used. A "window" consisting of 2 cm. of glass tubing is inserted into tube *A*, a short distance from the needle. Tube *E* is filled with water and clamped, or allowed to kink from its own weight, at the point where it is connected with the glass tube. If the latter method is followed, simply raising tube *E* will cause the siphon to run; lowering it will stop it. In performing paracentesis, *A*, *B*, *C* and the needle are sterilized by boiling. The siphon is started and then stopped. Puncture is made in the manner, and at the site, preferred by the operator. An assistant starts the siphon as soon as the needle enters the pleural cavity.



Aspirator for paracentesis.

Chicago State Hospital.

The Human Thought Mechanism.—The intellect cannot examine any fact of matter or energy directly. The telephone mechanism of the senses is always in between. Like the line officer in the war, we live in a dugout, the dark dugout of the cranial cavity. Our news comes in over the wires or afferent nerves. Our news is never complete, for our sense organs are not adapted to all the forces of nature. Our news is often faulty because the sense organs or the transmission is imperfect. Often we fail to get messages because our receiving operators are indolent, or doing other things. Moreover, if we get the news straight, we may not use it right; that is, make the right conclusion or judgment.—E. P. Lyon, *Texas State Journal of Medicine*.

Military Medicine and Surgery

MEDICAL STUDIES IN AVIATION*

[NOTE.—This series of papers represents the results of investigations made at the Medical Research Laboratory, Air Service, Mineola, L. I. It concerns particularly the protection of aviators against the effects of high altitudes, low barometric pressure and deficiency of oxygen.—*Ed.*]

I. ORGANIZATION AND OBJECTS OF THE MEDICAL RESEARCH BOARD, AIR SERVICE, U. S. ARMY†

YANDELL HENDERSON, Ph.D. (New Haven, Conn.)
and
E. G. SEIBERT, M.D. (Washington, D. C.)
Lieutenant-Colonel, M. C., N. A.
MINEOLA, L. I., N. Y.

The Medical Research Board was organized early in the autumn of 1917, "to investigate all conditions which affect the efficiency of pilots; to institute and carry out at flying schools or elsewhere such experiments and tests as will determine the ability of pilots to fly in high altitudes; to carry out experiments to provide suitable apparatus for the supply of oxygen to pilots in high altitudes; to act as a standing medical board for the consideration of all matters relating to the physical fitness of pilots." The equipment controlled by the board consists of a large and constantly expanding laboratory for research and teaching at one of the principal eastern flying fields, and of smaller branch laboratories for examining purposes already at work or being organized at twenty other flying fields and ground schools. In the main laboratory, departments have been organized in physiology, cardiovascular functions, psychology, ophthalmology, otology and psychiatry and neurology.

The general purpose of the organization is the study of the effects on the aviator of the peculiar conditions involved in flying. Among these the effect of altitude, that is, of altered barometric pressure, has presented itself as the one of most immediate importance. This series of papers will present a general oversight of the results on altitude thus far accomplished.

In this field four problems demand solution:

1. The cause and nature of the failure, physiologic or psychologic, or both, on the part of the pilot which frequently precedes a fall.
2. The development of a method for determining the maximum altitude to which each individual pilot can ascend without danger of such failure.
3. The development of forms of physical training for increasing the resistance of the pilot to the ill effects of altitude, *and for maintaining* him in a state, not of acclimatization to great altitude like the mountaineer, but rather in the perfect physical condition of the athlete.
4. A deeper knowledge of the nature of air staleness—a condition closely similar to athletic "overtraining," and to the so-called "irritable heart" or neurasthenia of the overstrained soldier.

We are now able to report an approximate solution of the first problem and a complete solution of the second. The third and fourth remain for further investigation from the starting point defined by these studies.

The results of previous investigations, from those of Paul Bert down to those of the Pike's Peak Expedition, had demonstrated clearly that the essential element in the effects of low barometric pressure, that is, great altitudes, on men consists in the reduced partial pressure of oxygen. Mountain sickness had been shown to be fundamentally due, not to the merely mechanical effects of decreased air pressure in the ears and on the blood vessels, but to oxygen deficiency. It was a fair presumption, therefore, from which to start investigation that the same thing would hold true in general of the functional disturbances of the aviator, although some modification of the symptoms might arise from the differences between mountaineering and aviation. These differences evidently consist in the aviator's more rapid ascent and descent, in the greater altitudes reached, and in the briefer period for which he remains at the altitude.

Previous investigations, notably those of the Pike's Peak Expedition, were directed largely to discovering the nature of acclimatization to altitudes. The length of time during which the aviator remains at altitudes is, however, too brief for any appreciable degree of acclimatization to be developed. On the contrary, day by day the brief but repeated strain of oxygen deficiency—a strain much like that of athletic overexertion—produces a cumulative ill effect on the aviator of the higher levels, until, if his condition is not recognized and his flying stopped, he one day loses consciousness at a great height, and falls. For the aviator is essentially an unacclimatized man, and must depend on the capacities of the healthy body adjusted only to the level of his hangar and his quarters. Our investigations have dealt, therefore, not with acclimatization, but with a hitherto largely neglected problem, namely, the organism's immediate compensatory reactions to oxygen deficiency.

In another class of accidents and near-accidents, the pilot's failure occurs near the end of a rapid descent. Often he has no recollection of how the crash occurred; he had lost consciousness, was asleep. This is highly significant; for this is a state which is induced by an ample supply of oxygen, or fresh air at full pressure, after a period of deprivation. As yet undescribed in the literature, so far as we are aware, and largely unexplained, this interval of unconsciousness, or collapse, or sometimes of excitement and loss of balance physical and mental of alcoholic type, is nevertheless a phenomenon often met by students of the low oxygen problem. It occurs in a wide variety of conditions: in miners escaping from "after-damp," in city firemen after coming out of smoke, in the older types of submarines on opening the hatches after submergence, in persons who are given oxygen after overexertion on a mountain, and after low oxygen experiments in the laboratory. But in none of these conditions are the consequences so serious as for the aviator, when, after remaining for a time at a height greater than he can safely withstand, he makes a rapid descent to denser air. Then, just as he is about to land and needs all his faculties at their best, he develops this oxygen intoxication as the rebound from oxygen deficiency.

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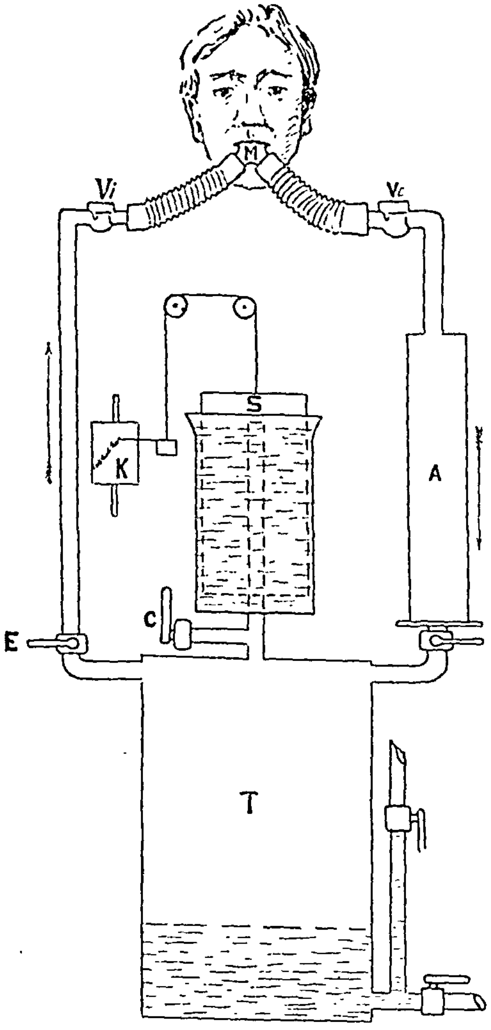
* Edited by Yandell Henderson, chairman, Medical Research Board.

† From the Medical Research Laboratory, Air Service, Mineola, L. I.

Laboratory experience had shown that to produce the acute effects of oxygen deficiency it is not necessary to climb a mountain or to go up in a plane, or even to be exposed to low barometric pressure. The result is easily accomplished at sea level by breathing into an apparatus consisting of a spirometer and a canister containing alkali. The exhaled carbon dioxid is absorbed by the alkali, while the oxygen is gradually reduced by the continual rebreathing. An apparatus of this sort, the so-called rebreathing apparatus, has been in use for some years past in the physiologic laboratory at the Yale Medical School as a simple and ready method of studying what are virtually the effects of altitude.



The rebreathing apparatus employed in all routine tests of the aviator's ability to withstand low oxygen. It consists of a tank, *T*, of about 120 liters capacity. The volume of air is determined by the amount of water that is run into it. The man under examination continually rebreathes the air of the tank (a clip is placed on his nose) through the inspiratory and expiratory valves, *Vi* and *Ve*. The oxygen is thus consumed and reduced. The exhaled carbon dioxid is taken up by sodium hydroxid in the absorber, *A*. The movements of respiration are recorded by the spirometer, *S*, connected to a smoked drum, *K*. As the oxygen is consumed and the air volume is thus reduced, the spirometer falls and the graphic record on the smoked drum rises. At the end of the test a sample of air is drawn from the tank and analyzed as a confirmation of the oxygen consumption and of the oxygen percentages (that is, altitudes) indicated by the graphic record.

Accordingly, as a preliminary to our work, the first step taken by the physiologic division was to perfect the rebreathing apparatus for routine use. Then followed several months of investigation to determine which of the autonomic functions of the body, e. g., the pulse and the arterial pressure, are most affected by low oxygen. Simultaneously the psychologic and ophthalmologic divisions perfected the apparatus and technic for observation, measurement, and record of motor and sensory disturbances.

Later, a steel chamber large enough to hold six or eight men at once and an air pump were installed, so that observations could be made under any desired reduction of air pressure. The effects observed at pressures equivalent to those attained in actual flying are described in the papers that follow. One experiment, however, deserves mention here. Two men were exposed to a minimum pressure equivalent to an altitude of 35,000 feet (barometer, 180 mm. of mercury). They were supplied with an oxygen apparatus, for air of this tenuity is incompatible with consciousness or even life, and they experienced no ill effects. In a word, these and similar observations have demonstrated that (1) the effects of altitude and low barometric pressure arise from deficiency of oxygen, and (2) in all essential features the conditions obtained by means of the rebreathing apparatus are the physiologic equivalents of low pressure.

It had come to be a generally accepted doctrine that deficiency of oxygen for short periods of time and above a certain limit, say 13 or 14 per cent. of an atmosphere, induces practically no recognizable effects. The subject of an experiment in which the oxygen is progressively reduced is frequently entirely unaware of any alteration in his own condition down to the point at which consciousness is abolished. Even after restoration he often refuses to believe that he has been through the glassy-eyed and wholly irresponsive condition from which the observer has revived him with fresh air.

Nevertheless, so far from moderate deficiency of oxygen being without effect, our observations have revealed the fact that in normal men characteristic alterations of function begin even with a slight lowering of the oxygen tension. Thus it appears that in flying the normal person begins to react almost from the moment that he leaves the ground. These reactions are found to be of a compensatory nature: the resistance of the healthy subject, the fact that up to a certain altitude he feels and shows no immediate ill effects, depends on the ability of his body automatically to effect alterations of breathing, pulse, and psychologic forces such that the net result is a practically normal individual. For all persons there are limits beyond which the body cannot compensate. In this respect there are the widest individual variations, forming a scale from the man with a "weak heart," who can withstand scarcely any reduction of oxygen, up to the man whose respiration and circulation are of such adaptability and power that he can go to 25,000 feet, and yet for a time be virtually normal.

The strain imposed by altitude is closely similar to that induced by extreme physical exertion. In both conditions, oxygen deficiency occurs; but at altitudes and in an aeroplane the effects are the more subtle and dangerous because of the lack of the stimulation to breathing and other functions that the increased carbon dioxid production affords during muscular exertion. For the same reason low oxygen, used with discretion in the low pressure chamber or the rebreathing apparatus, affords a condition clear and simple above any of the conventional forms of physical exercise sometimes employed in internal medicine as aids to examination of the heart.

The resistance and compensatory power of the normal man against low oxygen have been found to be practically the same qualities as "condition" or "training" in the athlete; and lack of compensatory power equivalent to being "out of training." In its more extreme forms it is identical with a "weak heart." From this it follows in theory, as the cardiovascular division in the Research Laboratory has in fact discovered, that the methods based on the rebreathing apparatus are not only applicable for measuring "fitness" and "staleness" in the aviator, but also offer hope for development into that long sought and greatly needed aid to cardiovascular diagnosis: a general test and measure of the "functional power of the heart."

It will be evident, however, that by the expression "functional power of the heart" we mean much more than merely the strength of that organ. We mean, rather, the totality of the processes of the body's gaseous exchanges with its atmospheric environment. These processes are the very essence of life. Low oxygen tests are thus fundamentally measurements of vitality.

In the following papers is contained a general description and a proximate analysis of the compensatory reactions and the forms of overstrain occurring under brief periods of partial oxygen deficiency in men who, having passed the ordinary medical examination, would generally be considered as normal. Among them our methods have revealed a considerable percentage unsuited to fly except at very moderate altitudes, and some unfit to fly at all. It is our hope that the institution of routine examinations by this technic will result in greatly reducing the number of pilots who may lose consciousness in the air and fall, whether because of inherent unfitness or because of otherwise unrecognized air staleness.

During the inception of our work and while our laboratory was being erected, we were allowed the privilege of laboratory space and facilities in the War Gas Experimental Laboratory, then under the U. S. Bureau of Mines. In this and in other matters this bureau has rendered us invaluable assistance. On behalf of the Medical Research Board it is a pleasant duty to express to Director Van H. Manning an acknowledgment of our debt.

New Sources of Quinin.—The extensive antimalarial campaign in India and the increased demand for the drug on account of the war have emphasized the necessity for finding new sources of quinin to keep up the world's supply. The *Indian Medical Gazette* for July describes the situation with reference to quinin in India. There are in that country a number of cinchona plantations in certain districts, under government supervision, which supply a considerable amount of quinin for the use of the government where quinin is a government monopoly. That country, however, like the rest of the world, is dependent for the greater portion of its quinin supply on Dutch Java, where quinin is also a government monopoly. The first plantations were started in India about 1864. On account of the largely increased demand for the drug, in 1900 a new plantation was begun containing about 9,000 acres. This now supplies bark for one of the large factories in India. In the past year the government, with the idea of still further increasing the cultivation of cinchona bark, directed a survey throughout India and Burma to locate cinchona plantations on a large scale. An area which seems to be suitable has been found near the Siam frontier covering about 400 square miles much of which, it is expected, will prove suitable for the successful growth of cinchona trees. The work of clearing and planting this territory will be begun as soon as possible.

II. PHYSIOLOGIC OBSERVATIONS AND METHODS *

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In the Medical Research Laboratory of the Air Service the ability of the aviator to respond to a decreasing oxygen supply is tested by an experiment of from twenty-five to thirty minutes' duration with the Henderson rebreathing apparatus. As the oxygen in the air inhaled from the apparatus is reduced, the man is thereby virtually elevated to a corresponding altitude.

During the test, the rate and volume per minute of respiration, the pulse frequency, and the systolic and diastolic arterial pressures are studied and have been found to give valuable evidence as to the altitude at which the man first responds to oxygen deficiency and as to the efficacy of his compensatory reactions. These reactions consist chiefly in an increased ventilation of the lungs and a more rapid blood flow. In a few men a concentration of the blood also occurs.

Some men compensate so easily and so well that they endure, at least for brief periods, as low as 6 per cent. of oxygen, corresponding to 31,000 feet: an altitude greater than any heavier than air machine has yet reached. Others fail to compensate, or compensate inadequately, and therefore cannot endure even the slight oxygen deficiency of moderate altitudes. From the data obtained in the test on the rebreathing apparatus, it becomes possible to determine approximately the maximum altitude to which the aviator may safely ascend.

If the man is even slightly below the best of physical condition, the altitude to which he is safe is distinctly reduced. A cold, indigestion, late hours, or worry may reduce his resistance temporarily by many thousand feet. More serious indisposition affects him to a corresponding extent.

THE BREATHING UNDER PROGRESSIVE DECREASE OF OXYGEN

The character of the breathing is important. In shallow breathing, only a comparatively small amount of the fresh air gets past the so-called dead space—the nose, pharynx, trachea and bronchi—to mingle with the air in contact with the blood vessels of the lungs. The deeper the breathing the greater will be the amount of fresh air that reaches the alveoli of the lungs, and hence the greater will be the supply of oxygen for the body tissues.

As the percentage of oxygen gradually decreases during a rebreathing test, there occurs a marked respiratory response. In a few men this increase in the lung ventilation begins with the first decrease in the oxygen percentage of the air breathed, and is a gradual proportional increase in inverse ration with the reduction in oxygen. More than 50 per cent. of the men examined, however, gave the first respiratory response between 16 and 14 per cent. of oxygen. Twenty-five per cent. responded first at a lower oxygen tension, while a small number gave no response. The increase in lung ventilation is for the higher percentages only slight, but it usually becomes more pronounced when the available oxygen has been decreased to between 12.5 and 9 per cent.

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* From the Medical Research Laboratory, Air Service, Mineola, L. I.

The rate of breathing for many men remains unchanged throughout the rebreathing test. The majority, however, show an increase of from two to four breaths per minute at between 8 and 6 per cent. of oxygen. A few of the men examined, showed by other tests to be physically somewhat stale, increased the frequency of breathing enormously.

The increase of volume per minute in the breathing during a rebreathing test differs with individuals. At percentages of oxygen between 8 and 6, the majority show an increase of 5.5 liters over the volume breathed at the beginning of the experiment, when on the average it is about 8.5 liters per minute. This increase gives for the average man a total volume of breathing per minute of approximately 14 liters at oxygen tensions corresponding to an altitude of 25,000 feet. The total per minute volume of air breathed has, in exceptional cases, been as great as 26 and 37 liters of air at oxygen tensions corresponding to from 25,000 to 28,000 feet.

It is the depth of breathing that ordinarily is increased by low oxygen The vast majority of subjects show an increase in depth of breathing of from 20 to 128 per cent. when under from 8.5 to 6 per cent. of oxygen. The volume of each breath in these men is found to range between 600 and 1,250 c.c., while for the same subjects when breathing air of normal oxygen content it is between 360 and 630 c.c.

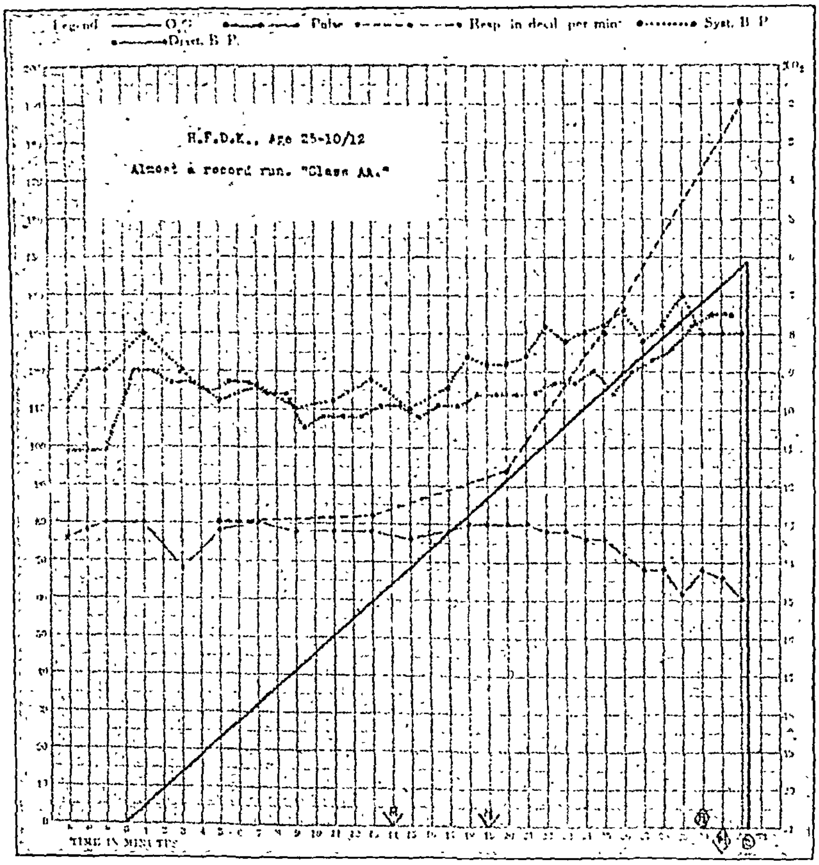

Chart 1.—Results obtained in the examination of an extra good man. The symbols at the bottom of the chart indicate his psychologic condition.

A good respiratory reaction to the gradual decrease in the oxygen of a rebreathing test is manifest in a slight increase in the depth of breathing, which begins at 16 or 15 per cent. of oxygen and continues progressively to increase slightly and gradually until from 12.5 to 9 per cent. of oxygen is reached. From these percentages down to 8.5 and 6 per cent. of oxygen, the total volume per minute of breathing increases much more rapidly; and the frequency of breathing may also increase from two to five breaths per minute. A total per minute increase of at least 5.5 liters should occur at the lower percentages of oxygen.

When the volume per minute of the breathing fails to increase as the amount of oxygen inhaled decreases, or when it increases only slightly, 1 or 2 liters, the lung ventilation is insufficient, and the subject is found unable to tolerate as low a tension of oxygen as the man whose breathing gradually deepens as the available oxygen decreases. Only a few men have failed to show a respiratory response to low oxygen, and none of these have tolerated well even such oxygen tensions as from 10 to 9 per cent. An occasional subject has been examined whose breathing responded well at first, but who later, when the percentage of oxygen was low, suddenly began to breathe less. When this happened, fainting or unconsciousness quickly followed.

THE HEART RATE UNDER DECREASING OXYGEN SUPPLY

In the active tissues the oxygen tension is always low. The higher the oxygen pressure in the blood, the greater therefore will be the amount of oxygen passing from the blood of the capillaries into the tissues. The dissociation of oxygen from the hemoglobin occurs with great rapidity and is most rapid when the differences in pressure are greatest. (This is not dependent on blood pressure.) It follows, therefore, that when the blood flows more rapidly through the capillaries of a tissue, more oxygen will be made available than if it flows slowly. At high altitudes, or under low oxygen, the blood, at first at least, is less saturated with oxygen than at low altitudes. Therefore, if the blood contains less oxygen, an increase in the rate of blood flow through the capillaries would be a means of providing the tissues with the oxygen demanded for their activity.

An increased rate of the blood flow has been demonstrated in men living at high altitudes and is, undoubtedly, one of the first of the adaptive or compensatory changes occurring in the rapid ascents made by the aviator.

Circulatory observations made on Pike's Peak (14,110 feet) indicate that the increase in the rate of blood flow is largely the result of a greater frequency of heart beat. A study of the pulse rate during exposure to low oxygen should, therefore, give a definite indication of the sensitiveness of the organism. We have found the pulse rate to be a trustworthy indicator of oxygen want, provided care is taken at the beginning of a rebreathing experiment to have the subject calm and quiet.

Throughout the rebreathing test the candidate's pulse rate is counted and the systolic and diastolic blood pressures are determined. The rate of heart beat has been found to accelerate in a few men at 17.5 per cent. of oxygen (5,000 feet). In one group of seventy men the accelerations began as follows:

Between 7,000 and 8,000 feet—from 16 to 15.5 per cent. of oxygen—1 per cent. began to react.

Between 8,000 and 9,000 feet—from 15.5 to 14.9 per cent. of oxygen—12 per cent.

Between 9,000 and 10,000 feet—from 14.9 to 14.2 per cent. of oxygen—20.

Between 10,000 and 11,000 feet—from 14.2 to 13.7 per cent. of oxygen—14.

Between 11,000 and 12,000 feet—from 13.7 to 13.2 per cent. of oxygen—23.

Between 12,000 and 13,000 feet—from 13.2 to 12.7 per cent. of oxygen—20.

Between 13,000 and 14,000 feet—from 12.7 to 12.2 per cent. of oxygen—6.

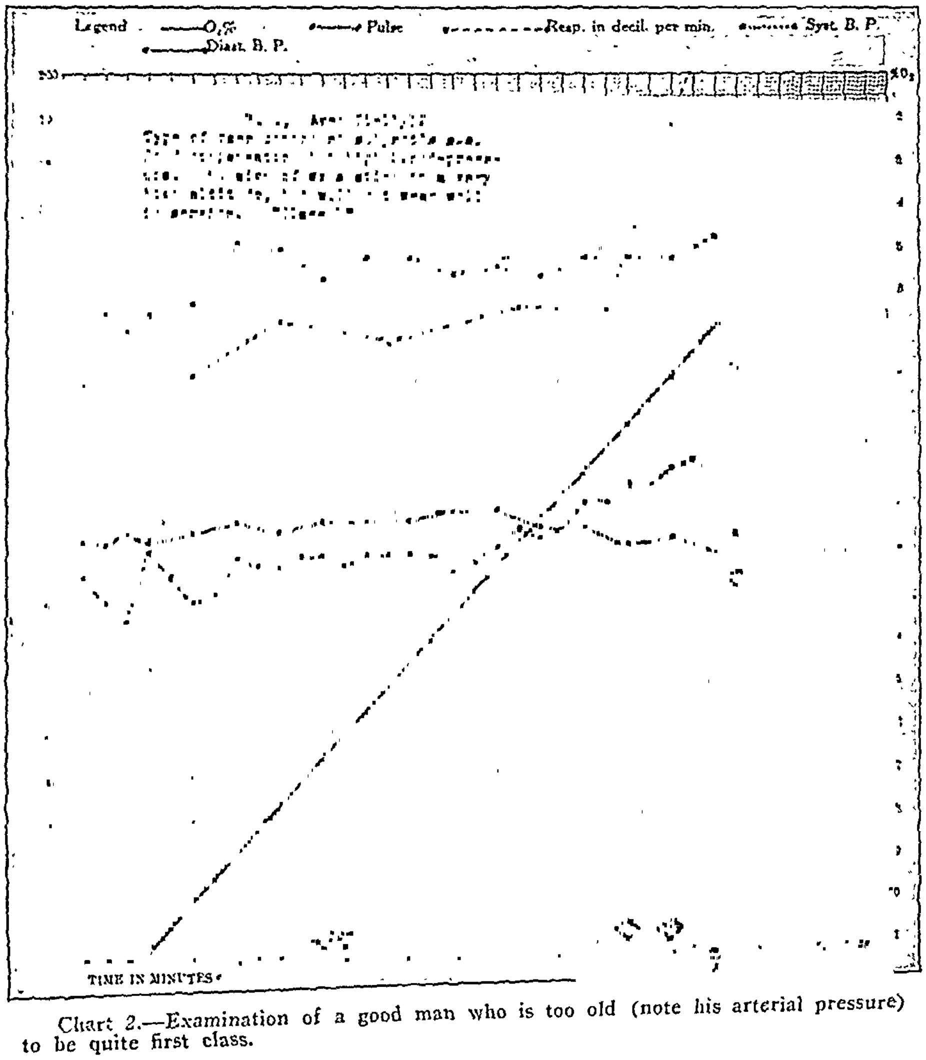

Chart 2.—Examination of a good man who is too old (note his arterial pressure) to be quite first class.

The increase in frequency of heart beat is at first slight, only from one to three beats; but as the oxygen percentage decreases, a greater increase in rate is likely to occur with each decrement in oxygen. A very marked acceleration usually occurs when the oxygen has fallen to between 13 and 9 per cent. Some men at first react with a good acceleration in rate, but soon reach a rate beyond which there is no further response, even though the oxygen percentage continues to be lowered. In such cases after holding at a fixed rate for a while the heart suddenly begins to slow: a sure indication that the limit of endurance has been reached.

A total increase of from fifteen to forty beats in the heart rate during a rebreathing test, in which the oxygen is lowered in half an hour to between 7.5 and 6.5 per cent., constitutes a good reaction to oxygen want. A failure to respond by an acceleration of the heart rate to lowered oxygen means either inability to react to a low oxygen of high altitudes and early failure, or that sufficient compensation is secured by increased breathing or blood concentration or both. Our experience indicates that the failure to respond is associated with poor toleration of low oxygen. An acceleration in heart rate of more than forty beats—from 50 to 70 have been observed—throws too great a burden on the circulatory mechanism, and occurs only in men who do not tolerate well low percentages of oxygen. In such men other compensatory reactions may fail to occur. So far as the response in pulse rate to decreasing oxygen is concerned it therefore becomes possible to rate the reactions poor, good and excessive. A poor or an excessive heart response should disqualify the candidate for very high altitudes; he should ascend to only moderate heights.

A delay in the first appearance of acceleration of the heart rate may be due to an insensitive cardiac brain center, while an early response may indicate a mechanism very sensitive and responsive to any decrease in available oxygen. It should be borne in mind, however, that while ordinarily there is an early acceleration in the heart rate, a delay may be due to the efficiency of other methods of compensating to the stimulus of oxygen want.

THE ARTERIAL PRESSURES UNDER DECREASING OXYGEN SUPPLY

The determinations of systolic and diastolic arterial blood pressures show whether the vasomotor mechanism responds to the stimulus of oxygen want in a manner adequate to maintain the increase in the rate of blood flow. At the same time they show whether the heart is compelled to work against an increased resistance. They also give an index, the pulse pressure, of the volume of ventricular output.

In the optimum type of response to the low oxygen of the rebreathing test the systolic pressure remains unchanged, that is, it holds on a level, until the oxygen has been lowered to between 14 and 9 per cent., after which as the oxygen is further lowered it gradually rises. Occasionally there may occur a gradual rise in the systolic pressure beginning with the first increase in the heart rate. This rise in pressure is ordinarily from 15 to 20 mm. of mercury. Other subjects who appear to have tolerated low oxygen equally well, even down to 6.5 per cent., have had a systolic pressure which held at the normal.

A rise in the systolic pressure of more than 30 mm. of mercury—from 40 to 60 mm. have been observed—is very likely due to a vasomotor failure to respond with a dilatation of the arterioles. Such conditions overwork the heart and may result in early circulatory failure.

There are other conditions of systolic pressure that are occasionally found in men undergoing the rebreathing test. A small percentage have a fall in the systolic pressure which begins about the time the pulse rate starts to accelerate, and continues to decline throughout the test. Such men have not tolerated the extremely low percentages of oxygen that men of the optimum type of response have endured. A large number have shown a sharp and sudden fall in the systolic pressure at low percentages of oxygen. This fall, if allowed to continue, leads to fainting. The subject recovers his normal pressure at once if he is returned to atmospheric air.

The best condition in the response of the diastolic pressure to a decreasing oxygen supply consists in an unchanged or slightly increased pressure throughout the test. Many men show a gradual well controlled fall in the diastolic pressure during the terminal period when the systolic pressure is rising. Such a fall in the diastolic pressure, if it occurs slowly and is not great, constitutes a fairly good reaction to extreme oxygen want. It can be explained as a vasomotor dilatation which occurs in order to protect the heart against the rising systolic pressure. In the optimum type of response to low oxygen the terminal fall in the diastolic pressure may not occur. If present it is never very pronounced and comes only after the oxygen is reduced to 9.5 per cent. or less.

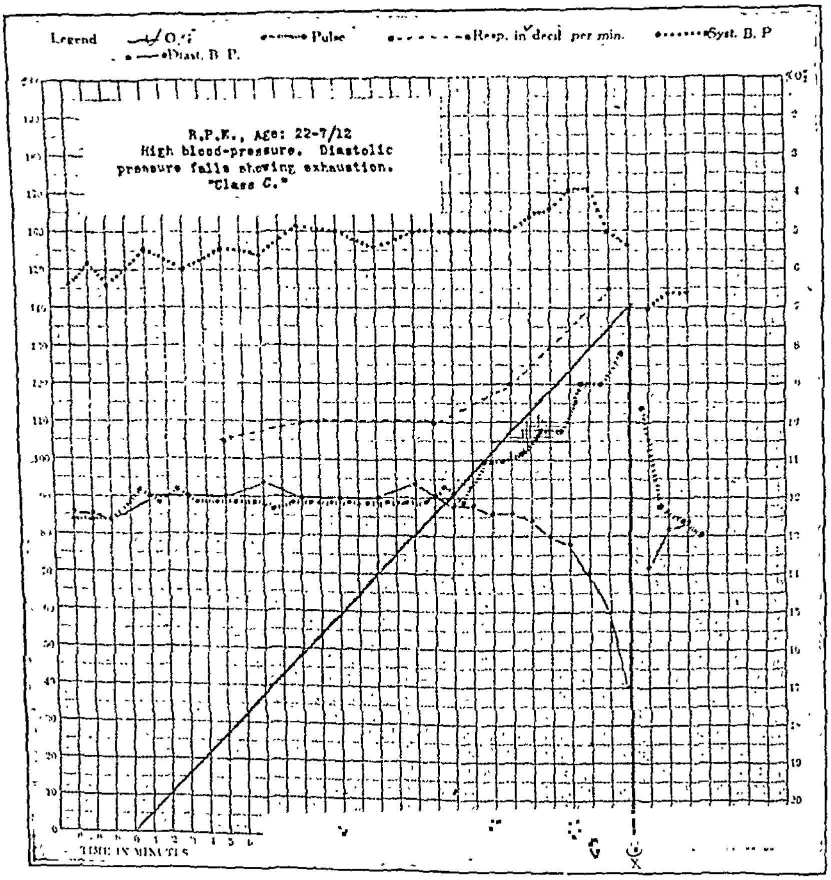

Chart 3.—Examination of a man unfit to ascend above moderate altitudes, unless supplied with oxygen apparatus.

About 66 per cent. of all men examined have had a fall in the diastolic pressure. In at least half of these the fall has been sudden and great. It is always associated with fainting and usually precedes a systolic fall. If the two occur together, in the order just indicated, the experiment must be terminated at once. The pronounced and sudden fall in diastolic pressure may occur at a high oxygen percentage. It has been found to occur as early as 14 and 13 per cent. of oxygen (10,400 and 12,200 feet). Such sudden falls in the diastolic pressure appear to be due to an overcoming of the vasomotor center by oxygen shortage. A decided fall in the diastolic pressure, even if more or less definitely controlled, is an indication that the subject will not tolerate well the altitude corresponding to the oxygen percentage at which it appears.

Three types of circulatory reaction to oxygen want have been observed: The first, the optimum, in which the pulse rate accelerates moderately as the oxygen decreases, the systolic pressure is unchanged or shows a terminal rise of not more than from 20 to 30 mm. of mercury, and the diastolic pressure remains unchanged or rises slightly. The second, the controlled diastolic fall, in which the pulse rate accelerates moderately and the systolic pressure rises as the diastolic pressure gradually falls. The third, the fainting type, in which after a period of fair, good or excessive response in the rate of heart beat to low oxygen, the diastolic pressure suddenly falls, and soon thereafter the systolic pressure, and the pulse rate slows. The optimum type may tolerate as low an oxygen as 6 per cent. (equivalent to an altitude of 29,000 feet) and may lose consciousness without fainting. He recovers quickly when restored to air, while the heart rate and blood pressures are soon back to their normals. The fainting type rarely endures as low an oxygen. If allowed to run his course he faints completely; and as he revives he requires a considerable time, sometimes an hour or two, to regain his normal pulse rate and blood pressures. There are, of course, gradations between the types here described.

The pulse pressure during a rebreathing test remains fairly constant in most men until the oxygen has fallen to between 12 and 9 per cent. (from 14,500 to 22,000 feet), after which it increases in amount during the further reduction in oxygen. The rise in pulse pressure occurs when the systolic pressure is rising and the diastolic either remaining constant or slowly falling. This is also the period when the heart beat is accelerating most rapidly. The amplitude of the heart output, it is claimed, is shown by the pulse pressure. If the pulse pressure be multiplied by the pulse rate and the product be taken as a relative measure of the volume of the blood stream, an increase in the circulation rate will be indicated, beginning between 16 and 14 per cent. of oxygen and progressively increasing as the oxygen further decreases. The period of most rapid flow of blood would, therefore, be that when the pulse pressure is also increasing, that is, from between 12 and 9 per cent. of oxygen to the end of the test. Therefore, a marked increase in the rate of the circulation of the blood during exposure to a low and decreasing oxygen is indicated. This increase in blood flow is, as shown earlier, an important and necessary compensatory reaction to low oxygen.

Incidently a few venous blood pressure determinations made during exposure to a decreasing oxygen supply have shown a fall which becomes very pronounced when the oxygen is 10 per cent. or less. This fall in venous pressure calls to mind a similar fall reported by Schneider and Sisco in men on Pike's Peak and indicates that the reactions observed in the rebreathing tests are the result of the same cause, low oxygen.

THE HEMOGLOBIN UNDER A DECREASING OXYGEN SUPPLY

Since an increase in the percentage of hemoglobin in the blood is one of the most important of the low oxygen compensations found to occur in men and animals living at high altitudes, it is interesting to find that it may also occur during short exposures to low oxygen. The rebreathing test of not more than thirty minutes' duration is too short to permit a concentration of hemoglobin in the majority of men. In order to test the part that the blood changes may play as a compensatory factor for oxygen want in such a short period as the aviator spends in the air, a series of experiments are now being made in the pneumatic chamber and also under low oxygen. In these the subject is held at a chosen pressure or a given percentage of oxygen for from forty to ninety minutes, the entire experiment lasting as much as two or two and a half hours. The hemoglobin has been determined with the Gower-Haldane hemoglobinometer on blood taken from a finger or an ear and also from a vein in the arm. At least 25 per cent. of all men examined have shown a well defined increase in the percentage of hemoglobin (from 4 to 9 per cent.) and the majority some evidence of concentration. It has been most clearly induced at pressures, and percentages of oxygen corresponding to between 18,000 and 20,000 feet. Almost all of the men have had to be held at the high altitudes twenty or more minutes before concentration began to be evident.

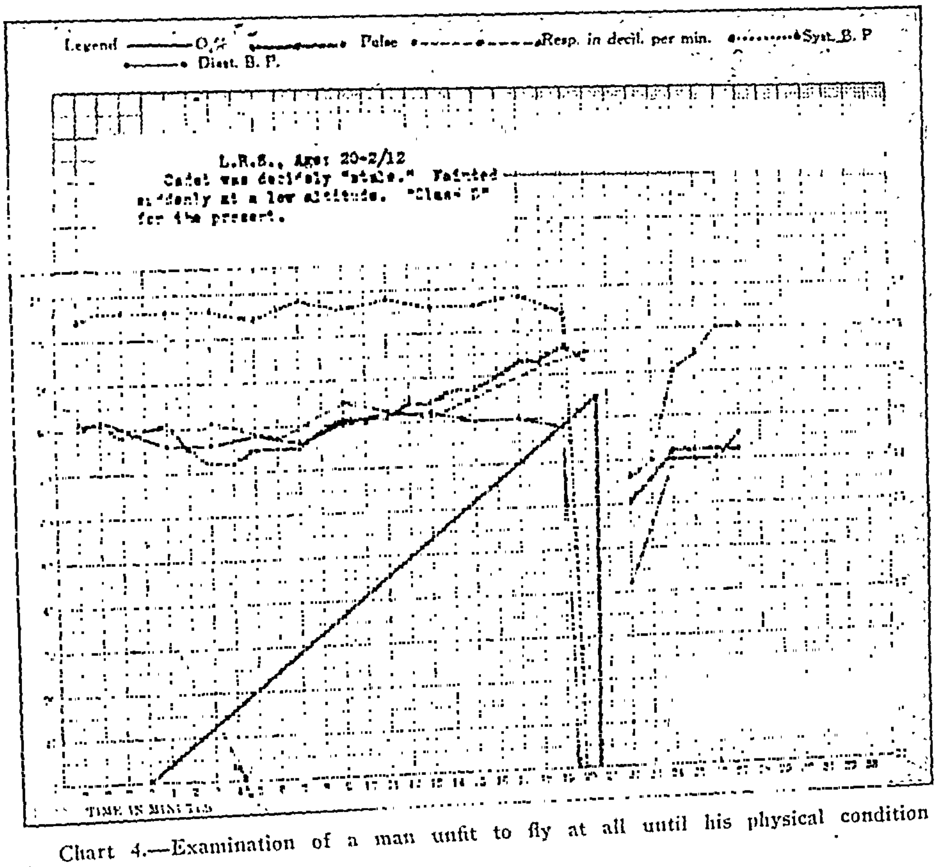

Chart 4.—Examination of a man unfit to fly at all until his physical condition improves.

THE RELATIVE VALUE OF THE COMPENSATORY FACTORS

It is important to obtain a better understanding of the interplay of the compensatory factors when man ascends quickly to very high altitudes and remains only a short time, a few hours at the most. A number of experiments have been made, therefore, with men in the pneumatic chamber, and also under low oxygen, in which they have been held for an hour or two under conditions corresponding to altitudes of from 15,000 to 20,000 feet. In all of these, two of the compensatory changes, those in breathing and circulation, have appeared almost simultaneously and increased steadily with the gradually increasing altitude. When the desired altitude was reached, the breathing either continued at the depth it had acquired during the period of progressive change or it became still deeper for a time. The pulse rate, which gives an index of the increase in the rate of blood flow, accelerated during the period corresponding to ascent and then, when the altitude was held, remained constant or, in some of the men, retarded slightly. The slowing of the pulse rate, when an altitude was thus maintained for a time, was so frequently observed that we sought for an explanation of it. In a number of men it was found that the heart was being relieved by other compensatory factors. In such cases one or the other or both of two changes occurred. There occurred a further deepening of the breathing, or a concentration of the hemoglobin, or both of these changes took place together. Often the breathing, after increasing in amount during the ascent, held at a constant increased depth during the stay at a given altitude; but in such case the hemoglobin was found to be concentrating as the pulse rate slowed. An unusual but interesting case was found in a man whose breathing failed to respond to the changes in altitude. He did not tolerate the low pressure well at first, but felt better after some time had been spent at the chosen pressure. In this man the heart accelerated decidedly, and later his hemoglobin concentrated about 8 per cent. His improvement occurred when the hemoglobin showed concentration.

Our studies show that during short exposures to high altitudes or low oxygen, such as the aviator experiences, the compensatory reactions of the body to a decreased oxygen are made almost entirely by the circulation and by the breathing. A considerable number of men may, after the lapse of about an hour, secure some benefit from a slowly developing concentration of the hemoglobin. The order of response by the adaptive mechanisms is not that of the good reaction seen among mountaineers, in whom the breathing first responds while the other compensatory changes take place more slowly. The reaction resembles more nearly that seen during an attack of mountain sickness among mountaineers. In such men the heart beat is greatly accelerated during the attack. The aviator, it appears, must depend largely on his heart and his breathing for compensation to the fall in oxygen that he encounters as he ascends.

III. CARDIOVASCULAR OBSERVATIONS *

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It has long been known that persons with defective hearts tolerate very badly such altitudes as those of Denver, Phoenix and Mexico City. Many instances have been quoted of serious and even fatal attacks of cardiac dilatation, pulmonary edema, etc., occurring within a few days after the arrival at these places. This popular view has, however, received up to the present very little confirmation from scientific work. Marked alterations in respiration have indeed been described; and the effects on the chemistry of the blood and tissues in reference to transport of oxygen have been studied in great detail. Beyond suggestions, however, that certain changes in blood flow might occur as the result of high altitudes, little evidence has been at hand that the effect on circulation is of great importance; especially there has been entire lack of proof of marked circulatory strain, or of the possibility of such disasters to the heart as have been popularly described.

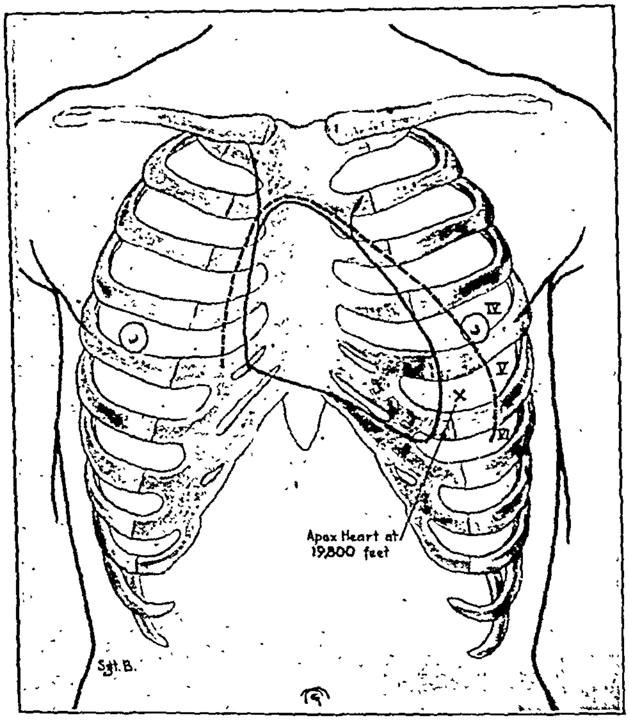

Fig. 1.—Dilatation of the heart under deficiency of oxygen beyond the individual's power of compensation: solid line, percussion outline of heart before and after experiment; broken line, outline at 19,800 feet elevation in low-pressure chamber.

The explanation is that the best type of organism makes its circulatory adjustments so smoothly and with so little strain that there is almost no evidence of anything of great importance going on. It is only by study of less normal types that we appreciate both the serious effects that may be due to failure of circulatory reaction, and the nature of this reaction itself.

Perhaps the most striking single fact brought to light by the present research is that heart failure following marked dilatation is exceedingly common as the result of reduction of atmospheric pressure. Dilatations of from 3 to 5 cm. have been not infrequently found, always followed by collapse and fainting if oxygen is not immediately given. The commonness of this syndrome may be judged from the experience of ten medical officers taken into the low-pressure chamber on two occasions for demonstration purposes. These were men of average constitution, though not of athletic type. Five of them developed marked dilatation, one at 14,000, one at 16,000, two at 18,000 and one at 20,000 feet. It was interesting that in each case the dilatation was discovered by percussion before any subjective symptom was present; but in each case the individual began to feel very ill within a minute thereafter and would have fainted if oxygen had not been administered. It is our practice in using the low-pressure chamber for the observer to take oxygen even at the lower "altitudes."

COMPENSATION BY THE CIRCULATORY SYSTEM FOR LOW OXYGEN

The explanation of many physiologic events lies in the power of the organism to make readjustments to compensate for deleterious changes in the environment. In the compensation for low oxygen, the circulation appears to be the factor of first importance. Changes in respiration, in concentration or chemical constitution of the blood, or in the mechanism of gaseous exchange are important, but they are able to make good only partially for the deficiency. The factor of chief importance with a wide range of adaptability is the rate of blood flow, both in general and as regards special parts. If the blood carries less oxygen per unit, more blood must be sent to the organs that need it in order to furnish the sum total of the amount that is required.

This, of course, means increase in pulse rate, often increase of blood pressure (especially of pulse pressure) and delicate readjustments of blood distribution. All of this calls for accurate control of the vasomotor system and increased strain on the heart. This strain must be carried at a time when the oxygen supply of the heart muscle itself is precarious.

Not only is the maintenance of perfect circulation vitally important for efficient existence at high altitudes, but the heart is itself particularly vulnerable to direct effects of oxygen deficiency. There is the possibility of a vicious circle of a most dangerous kind. For if the circulation falters for a moment, not only will the nerve centers run the risk of subjection to a paralyzing anoxemia, but the nutrition of the heart muscle is impaired. Further interference with circulatory efficiency ensues, and total collapse is inevitable.

Add the fact that this collapse comes practically always without premonitory symptoms of any kind, and the very great danger to the aviator becomes apparent. There is a total reversal of conditions from those of heart strain from vigorous exercise, in which the intense discomfort caused by overexertion gives ample warning that one is approaching the limit, and in which at worst partial failure of the heart would do

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* From the Medical Research Laboratory, Air Service, Mineola, L. I.

no more than make further exertion impossible, and so automatically terminate the strain.

This vicious circle may satisfactorily explain many cases of sudden fainting at low altitudes. For if there were a momentary failure of coronary circulation due perhaps primarily to a wholly neurotic influence on the vasomotors, a condition of undernourishment of the heart would be started that would be rapidly cumulative.

The elements of strength in meeting the situation are a strong heart muscle, efficient and accurately adjustable coronary circulation, and the ability of the peripheral vasomotors to allow increase of blood flow to the parts that need it without undue strain on the heart by increased blood pressure. These arterial reactions demand in the first line perfect anatomic condition of the vascular walls and perfect vasomotor control. As a consequence, two classes of cases are found that are most likely to react badly to lowered oxygen tension: men who have any arterial change in the way of sclerosis, and those with poor vasomotor control.

The latter class includes numerous individuals who are either overvigorous in their reactions and run a high blood pressure (often high strung, efficient people) or who have fluctuations of vasomotor tone which are manifested in a variety of ways but eventually lead to an identical result, namely, circulatory collapse and fainting, usually following marked dilatation of the heart.

The "optimum" type of individual will go to extreme heights with practically no signs of circulatory difficulty, and will at the end become unconscious from direct effect of oxygen want on cortical centers, giving quite a different picture from that of circulatory collapse.

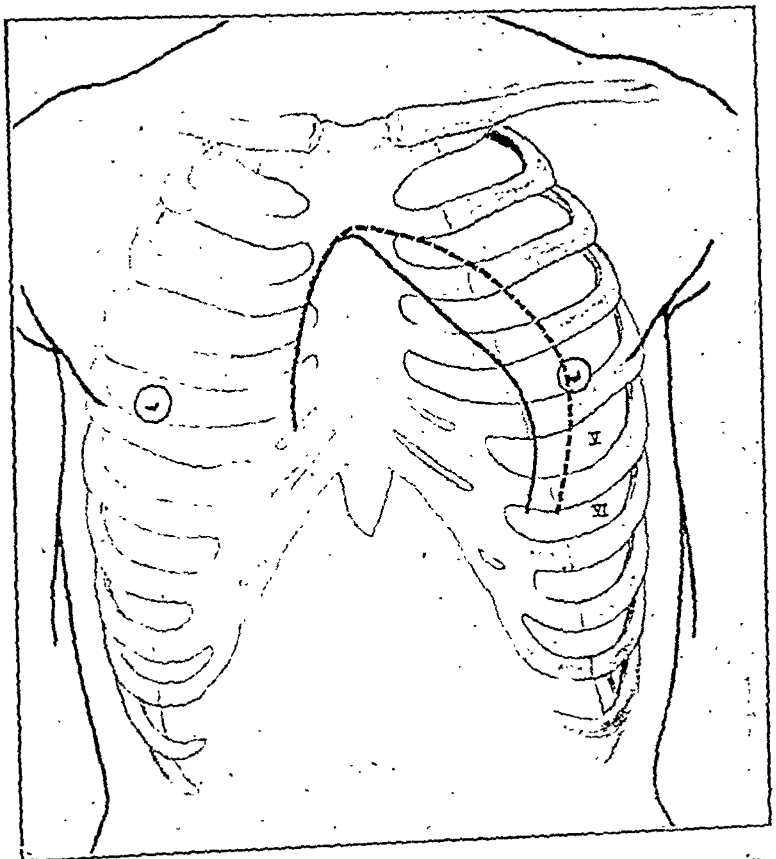

Fig. 2.—Dilatation of the heart at 18,000 feet when man was in poor condition; when feeling well, this man could go 5,000 feet higher without any ill effects: solid line, outline of heart before and after experiment; broken line, heart outline to percussion at elevation of 18,000 feet.

FAILURE TO COMPENSATE

Paradoxically enough, the poorer types of organisms also fail to show heart strain and dilatation. Persons of poor physical and sluggish reactions, whether by nature or because of sedentary life and lack of exercise, ordinarily show a more or less marked failure of the compensations demanded for efficient existence under the altered conditions. They show little or no quickening of the pulse, and no change, or even a fall, in blood pressure. They simply become inefficient instead of making the strain.

Many types with defective hearts and blood vessels do not show heart strain because, having tried to meet the requirements, and having found it impossible, they give up the fight and fail.

Those who do show it, as previously suggested, are persons of vigorous reactions, especially high strung types, but are often "out of condition" for one reason or another. The influence of factors of condition, which are too often underestimated, has been found to be very great. Dissipation, nerve strain, slight infections, may involve heart weakness or abnormal vasomotor reactions which overstrain or undernourish the heart, and thus cause the aviator's death.

CONDITION

The influence of "condition" is a point of the greatest practical importance, of course. One of our hardiest subjects illustrated this. He had been in the low-pressure chamber on one occasion at an elevation of 23,000 feet for some minutes and remained in practically perfect condition. The following day the experiment was repeated; but on the evening between he had dined late with friends, with the usual but not excessive accompaniments. When the altitude of 18,000 feet was reached on the second test he was found to be completely inefficient; he was markedly cyanotic; his heart was dilated 3 cm., and the heart sounds were of very poor quality. He would have collapsed in another minute if oxygen had not been administered.

The question of just what is involved in "good condition" has received much consideration. On the basis of our present knowledge, the most important element seems to be normal vasomotor control, that is, adequate nourishment of the tissues with a minimum of strain on the heart. In this the coronary circulation is of first importance. Other factors are, doubtless, the strength and condition of the heart muscle and probably certain matters of general metabolism, for example, the ability to generate energy rapidly without the accumulation of harmful waste products.

The practical result of this knowledge of the strain on the circulatory system involved in aviation, and the paramount importance of "condition," bear on both the selection and the maintenance of the flying personnel. Only those men should be allowed to fly who possess faultless circulatory systems; and once in the service, aviators deserve the most scrupulous oversight to keep them in as perfect condition as a well-trained football team, and to prevent them from going into the air when they are not in condition.

LOW OXYGEN AS A FUNCTIONAL HEART TEST

As far as the selection of men with perfect circulation is concerned, we possess fortunately a wonderful diagnostic agent in the low oxygen test, to which eventually all flyers will be subjected. We have come to regard the Henderson rebreathing apparatus as affording by far the most efficient test of the heart, from both anatomic and functional points of view, that we possess.

The strain of making good for low oxygen tension in the atmosphere is so great that any latent defect, fully compensated and not to be discovered by ordinary methods of examination, becomes glaringly apparent during a rebreathing test.

The question of anatomic condition of the valves, however, is not the only consideration with regard to a heart. Many a damaged heart will compensate so well, as the result of the quality of the heart muscle, that its functional power may even be above normal. Clinicians have long been searching for a functional heart test which would tell them, not what the heart was anatomically, but what it could do. In the low oxygen methods we have just such a test, and it should be of great value in ordinary clinical work.

In the case of well compensated valvular disease, murmurs develop under low oxygen or become much stronger, and accentuation of heart sounds takes place, indicating hypertrophy of the left ventricle or back pressure through the lungs; the blood pressure is high and the heart is evidently overworking seriously. Often in young men such a heart will be fully as successful as a normal one in meeting the demands made on it in ordinary life; in fact, overcompensation is the rule rather than a failure to compensate. But under the low oxygen test the underlying defect is revealed.

In the case of valvular lesions that are less well compensated, the heart is more readily reduced to incompetence; after the period of overwork there is marked cyanosis, excessive discomfort, and insufficiency of the peripheral circulation, most delicately shown by inability to perform well on the psychologic apparatus that forms part of the rebreathing test.

In subjects with arterial disease there is a more or less marked rise in blood pressure owing to inability of the peripheral vessels to make way for the increase of blood flow without throwing a much increased strain on the heart. At the same time there is doubtless insufficiency of the coronary circulation as well, so that between high blood pressure and poor nutrition the heart muscle soon becomes incompetent; the heart sounds deteriorate rapidly in quality, and the peripheral circulation becomes insufficient.

Tendencies to arrhythmia are brought out in a remarkable way by the rebreathing apparatus: several hearts that showed at the start only an occasional extrasystole have become arrhythmic to a degree that was positively alarming. We suspect that there is the possibility of danger in this method of examination for hearts showing difficulty of conduction or in which there is a possibility of the development of ventricular fibrillation.

One of the most gratifying features of this work has been the direct bearing of the observations on fundamental questions of circulatory physiology and pathology. In this way they go far beyond the narrow field of aviation medicine in their scope. It is impossible here to discuss thoroughly the many side-lights thrown on clinical medicine. A few of these points may, however, be briefly mentioned.

One is the supreme importance of normal vasomotor control in connection with circulatory efficiency, which means general efficiency as well. Abnormal vasomotor reactions mean either high blood pressure with excessive heart strain if the demands on the circulation are met, or inefficiency if the demands are not met.

The behavior in the test of subjects with more or less marked arteriosclerosis has been of the greatest value in understanding the effect of arterial change[1] under conditions of ordinary life. An interesting fact is brought out by the behavior in the test usually shown by subjects in their thirties, which suggests that arterial change at this age is commonly already considerable. This may account to a large degree for the well known fact that 20 is the best age for flyers, and that every year above this decreases the likelihood of their being able to stand the strain of hard service.

The relation of nerve tension to vasomotor control is a subject on which we have been able to throw some light, and our results fit in well with the demonstration by the British commissions of the intimate relation of the vasomotor system to shell shock, trench neuroses, irritable heart and allied conditions that have contributed so largely to the disabilities of this war. The frequency with which slight cardiac lesions have been demonstrated among presumably healthy men has been striking. Even among a class of men as carefully picked as American aviators we have found more than 5 per cent. These were usually cases that could hardly have been demonstrated by ordinary means of examination, and would have passed the most rigid inspection as "functional heart murmurs" or at worst as borderline cases with a wide margin of safety. Every one who has worked on the Army cardiovascular boards knows how common and how troublesome such cases are; and the British experience shows that men who genuinely have slight organic lesions will not stand up under modern war conditions. For this kind of work the low oxygen test should be of the greatest value.

Similar to this class of cases are "athletic hearts," which we have very frequently encountered among aviators, who are to a large extent drawn from the ranks of college athletes. Such hearts behave very badly under low oxygen. They show high blood pressure, marked heart strain, with exhaustion and eventual collapse. Without entering into any discussion of the question, it may be said that our evidence points strongly to the belief that the so-called "athletic heart" represents not a faulty involution of a normally hypertrophied heart, but a heart that has either been definitely injured by strain, or one with an underlying vascular lesion too slight or too well compensated to be discovered. We have demonstrated slight old mitral insufficiency in several men whose names are familiar on the sporting page of the papers.

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[1] See Chart 2 in the preceding paper of this series.

Quackery on Both Sides of the Ocean.—Under this heading Dr. Pinkhof comments in the *Nederlandsch Tijdschrift* on the efforts made by the osteopaths to get appointed to the medical corps of the United States Army. He says: "Dr. Gorgas and his staff are better antimonopolists in fact than the legislators in our land (the Netherlands). Our legislators would like to provide a monopoly for the quacks, that is, to confer on them the exceptional privilege of practicing medicine without fulfilling the conditions which every honest citizen has to fulfil. At a recent representative meeting of the organized pharmacists of the Netherlands, the chairman, H. L. Visser, gave a good definition of quackery which may well be taken to heart by every one. He said, 'Quackery, whatever its form, is a gambling game, with life for the stakes and health as the highest prize.'"

IV. PSYCHOLOGIC OBSERVATIONS AND METHODS*

KNIGHT DUNLAP (Baltimore)
Major, S. C., N. A.
Mineola, L. I., N. Y.

The psychologic tests now used in determining the ability of candidates for the aviation service to withstand altitude have been developed for use under the practical conditions of the Henderson rebreathing apparatus, in which the rate of oxygen decrease is rapid. The statements made here with regard to the course of the phenomena apply only to conditions of brief ascents, and do not necessarily hold in all particulars for cases in which the aviator is kept at corresponding altitudes for long periods of time.

The effects of oxygen insufficiency on the physiologic process were in the beginning of our work studied empirically, with the least possible hypothetic guidance. Our results square distinctly with the conception of psychologic processes as integrative, that is, as dependent on the working together of the central nervous system as a whole rather than on the action of any specific parts of the system.

The basic and important psychologic effects of oxygen deficiency are on voluntary sensorimotor coordination and attention. Until asphyxiation reaches the stage in which the integrative mechanism is rapidly approaching the condition of complete failure, no effects are demonstrable that are not clearly the failure of the one or the other, or both, of these two mental factors. In the prefinal stages perception is as efficient as the muscular control of the sense organs and organs of expression, and the power to attend to the stimuli, permit. Discriminative judgment, likewise, shows no falling off in rapidity or accuracy except as impaired motor control and attention produce it. Memory, both "immediate memory," as tested by the ability to reproduce what has been perceived or learned immediately before, and "true memory," as tested by the ability to reproduce something that has been "latent" for a certain interval after being learned, is apparently not affected, except as the inability to attend to the details in learning or in reproducing, or inability to control the muscular mechanism of expression, may enter. The efficiency of limited neuromuscular groups, as indicated by dynamometer tests, is not impaired in the prefinal stages of asphyxiation.

As instances of tests involving perception and discrimination, we may cite the copying of a list of words and the translation of words into code. In both of these cases, speed and accuracy are maintained up to the final stages of asphyxiation, provided the muscular mechanism of accommodation and convergence is not seriously affected; although the mechanism for handwriting may be so affected that the written results of the list are legible with difficulty.

In more complicated discrimination, in which rapid and accurate recognition and classification of material are required, the results are similar. Ability to locate correctly on a chart the positions of objects previously seen is unimpaired up to the point at which the individual's coordinations of movement become so much affected that the charting is defective on that account.

It is interesting to note that the sensitivity and acuity of the sense organs show no consistent impairment, and that apparently the speed of simple reactions (the simple reactions do not, in general, require a high degree of integration) is not intrinsically diminished. More work remains to be done on simple reactions, however, before definite statements can be made. The distinctive effect on the nervous system, in short, seems to be a change in its integrative action, and not a change in the efficiency of any particular part or unit. The whole picture of progressive asphyxiation, from a psychologic point of view, is strongly suggestive of the picture of progressive alcoholic intoxication.

Under the practical requirements of rating, tests must be single and brief, during progressive depletion of the oxygen supply. If many individuals are to be examined it is not practicable to spend even several hours on each one. Hence it is not possible to hold the subject at a moderately high altitude, such that asphyxiation effects will eventually appear. Nor is it possible to repeat a briefer test a number of times. Hence, the subject must be allowed to rebreath himself rapidly (during not much over a half hour, at most) to a low point of oxygen tension, reaching his maximal "altitude" for that rate of "ascent." It follows that the method used must be one which is not approved for psychologic work under other conditions, and which, for want of a better term, is called clinical. That is, since the reactor's condition is rapidly changing from minute to minute, we must be able to determine at any minute his psychologic condition, and cannot use the method (more exact under other conditions) of determining the average speed and accuracy of work done during a period of several minutes.

It was early discovered that under asphyxiation, as under alcoholic intoxication, it is possible for a reactor to "pull himself together" for a brief span of time (a minute or even several minutes), during which his efficiency on a set task may be as high as in his normal condition, or even higher, sinking at the termination of the task to a relatively low level of efficiency. If given a series of tasks, with brief resting intervals between, the reactor may therefore accomplish a performance that is practically normal, even up to a minute or two before the point at which complete lapse of integration occurs. In this way, his real psychologic deterioration may be concealed. It is necessary, therefore, to set a task which, although minimally fatiguing, is practically continuous, allowing the reactor no expected periods in which no work will be demanded of him, and thus preventing him from making use of attention peaks, as the phases of "pulling himself together" may justly be called. In determining the sensitivity or acuity of sense organs, on the other hand, the "attention peaks" are precisely in order, and pause should be taken to present the stimuli at the highest peaks.

It is probable that in earlier work on the action of alcohol and other drugs, and of fatigue, many failures to find psychophysical effects were due to the evoking of attention peaks by brief or periodic tests, thus masking the real condition of the patient tested.

Many tests that otherwise would be applicable impel the reactor to hold his breath during the crucial moments. The conventional steadiness test is one of this sort. If the reactor, already suffering from oxygen deficiency, holds his breath for twenty seconds, or largely reduces his breathing during that period, he makes a large change in his oxygen supply. Hence the purpose of the test is largely defeated. The steadiness test, and others in this class, although some show marked effects of low oxygen tension, cannot be used.

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* From the Medical Research Laboratory, Air Service, Mineola, L. I.

The apparatus used in administering the psychologic test we have called the "L V F" apparatus. The principal parts of the apparatus are assembled on a table with a top adjustable in height and slope, supported on a single heavy post from a cast iron base. This table (the so-called Dunlap table) is designed to give the necessary rigid but convenient mounting.

APPARATUS AND METHOD OF TESTING

The apparatus mounted on the table is designed to require attention and reaction on the part of the man undergoing the test analogous to the conditions of the pilot in the air. It allows the slightest deviation of reaction or lapse of attention to be noted. It consists of three separate units:

1. A series of fourteen stimulus lamps (2 candle power) arranged in two rows of seven each, with two similarly arranged rows of contact buttons, each button surrounded by a metal washer; a green check lamp and a red error lamp, and a stylus with a hard rubber handle and metal tip. These parts of the unit are so wired electrically that when a stimulus lamp is lighted the corresponding contact button is "alive," and if touched with the metal tip of the stylus causes the check lamp to light. If the washer surrounding any of the buttons is touched with the stylus at any time, the error lamp is lighted.
2. Two ammeters, mounted on a metal arm above the table top. These are connected in series with two rheostats, one on the upper side of the table top at the edge nearer the reactor, the other underneath, at the edge nearer the observer. One ammeter faces the reactor, the other the observer. A change in the resistance made by the observer at his rheostat, causing a change in the ammeter reading, may be compensated for by a change in the reactor's rheostat, by which the original ammeter reading may be restored.
3. A small electric motor, mounted on the upper side of the table top. This motor is connected in series with a third rheostat underneath the table. A two-way lever switch mounted underneath the table at the observer's edge and a rocking pedal two-way switch on the floor under the table, connected with the rheostat, can be cut out (thus increasing the speed of the motor) by either switch, and again cut in (thus restoring the lower motor speed) by either switch.

In order to control the fourteen stimulus lamps, lighting them at the proper time, an accessory piece of apparatus is mounted on a small table in any convenient position, and electrically connected with the apparatus on the Dunlap table. At first, this accessory apparatus consisted of a button board, having fourteen buttons corresponding to the fourteen lights; and from these buttons an enlisted man controlled the lighting of the stimulus lamps, timing his actions by a stop-watch. For this button board an automatic distributor is now being substituted, which both times and selects the lights, being operated by a synchronous motor.

Before the rebreathing is commenced, the reactor is given carefully formulated instructions, and if necessary he is coached during the first three minutes of the work. His tasks are as follows: 1. As soon as a stimulus lamp lights he must touch with the stylus, held in the right hand (except in the case of left-handed subjects), the corresponding "button," touching it accurately and carefully. 2. Whenever the motor increases speed, as indicated by a change in its sound, he must bring the speed down to normal again by throwing his pedal switch. 3. When the hand of the ammeter is changed from its standard position, he must bring it back to standard by varying the position of the rheostat handle.

During the early part of the test, the psychologist notes the composure and attention of the reactor, and his comprehension of the instructions; also his motor tendencies, which are recorded in a fixed scale of types. Further, the psychologist watches for the beginning of the effects of oxygen deficiency on attention and coordination; for the moments at which these effects attain a certain standardized importance, and for the final moment of "complete inefficiency," which will be followed very quickly by a complete breakdown and unconsciousness unless the reactor is given air. Since the change in the reactor's condition is very rapid at this phase, and the effects on the nervous system lag behind the respiratory conditions somewhat, prompt relief is necessary, or the reactor may become unconscious after being given air: before the renewed air supply "catches up" with the nervous system, as it were.

RESULTS

The various ways in which the effects on coordination and attention are manifested in different reactors have been carefully analyzed and studied, and, as a result, very satisfactory results are obtained.

In addition to the practical application of the tests to the rating of aviators, we have obtained results that have considerable scientific value for future psychologic work. The application of our general method (that is, involving a group of continuous tasks) to the study of problems of drug and fatigue action is an obvious possibility. Our specific apparatus and routine are adapted to the oxygen rating problem alone, but modifications to suit the purposes of research may be readily made. One such modification has been made already by Captain Dockeray, for work on fatigue and "staleness," and is being given thorough trial. Carefully worked out series of experiments on discrimination and judgment, code translation, mathematical operations, memory, auditory functions, etc., have been made under the supervision of Captains Dockeray and Johnson and myself for the purpose of checking my earlier results, and tests on handwriting have been made by Major Watson in the low pressure tank. These, in addition to their bearing on the rating tests, have produced important scientific results.

In working on the psychologic factors in blood pressure changes, striking indications of the presence of which appeared in the rating tests, we have found strong evidence that apprehension is uniformly accompanied by a rise in systolic pressure, which tends shortly to return to normal, but that when actual fear is present the rise is much more sustained. The conditions under which the rise due to apprehension occurs are somewhat complicated; we should have reason to expect it under practical conditions, for example, when the flying cadet is notified that he is to make a flight, with possibly entire subsidence a short time later when he actually gets into the machine.

Some Thrift Expedients in Germany.—P. Bonnette relates in the *Presse médicale* of recent date that the Germans are putting up fruits with tablets of sodium benzoate and sodium cinnamate, without sugar. The sugar can be added when they are to be served if desired. Milk to be transported any distance is frozen in large cakes kept in isolating containers. Fallen leaves are collected in large quantities, dried in ovens, ground, mixed with molasses and pressed into cakes which are fed to animals in the place of oats. He quotes a Munich paper to the effect that these dried leaves make excellent fodder for animals, especially the leaves of the elder. They are said to be richer in albumin than hay, and easier to digest as they do not contain so much cellulose. Visitors to the Leipzig fair were notified that they must bring their own tablecloths and napkins if they wanted any. Shrouds for the dead are made of paper, and he states that it is being debated whether to make it compulsory to exchange the clothes of the dead for paper substitutes.

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* From the Medical Research Laboratory, Air Service, Mineola, L. I.

COLOR VISION

Normal color vision is considered a requisite for a good pilot by all Allied air services. The object of our tests has been to determine the effect of low oxygen tension on color vision.

Stilling's plates were used in these tests. Five subjects were examined in the low-pressure tank and carried to 20,000 feet or above. Five subjects were examined on the rebreathing apparatus and carried above 20,000 feet. This series of subjects, during the entire experiment, showed no change in color vision. Threshold color vision will be considered under retinal sensitivity.

FIELD OF BINOCULAR FIXATION

It is important that the aviator be able to carry the eyes as far as possible in the various directions without seeing double. If a man has a contracted field of fixation, it necessarily impairs his ability in flying. The field of binocular fixation has been taken by means of the Schweiger perimeter modified for binocular use or by means of a large tangent screen, the Wilmer wand and Wilmer glasses being used. Of 122 men acceptable for the Aviation Section, Signal Corps, who have been examined and sixteen who were not acceptable, 7.37 per cent. of the normals showed contraction of the field of binocular fixation, and 50 per cent. of the subnormal men showed contraction. Narrowing of the field was most marked above.

MUSCLE BALANCE

Normal muscle balance should be insisted on, for even a small defect may be accentuated by the strain of flying and lack of oxygen, resulting in diplopia or at least a marked contraction of the field of binocular fixation at low altitudes. Exophoria and hyperphoria are more serious than esophoria. Twenty-five men, ocularly acceptable for the Aviation Section, Signal Corps, were examined in the low-pressure chamber and on the rebreathing apparatus. Abduction decreased 1.31 degrees at 15,000 feet and 1.55 degrees at 20,000 feet. Adduction decreased 1.75 degrees at 15,000 feet and 1.90 degrees at 20,000 feet. Sursumvergence decreased 1.15 degrees at 15,000 and 1.25 degrees at 20,000 feet.

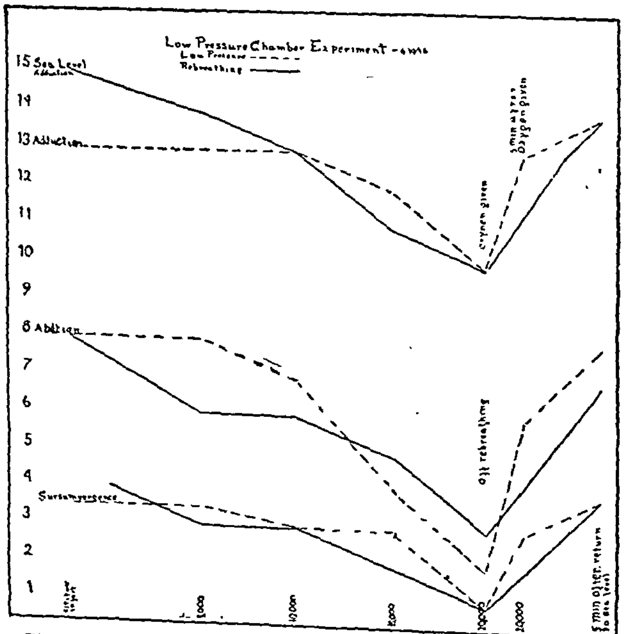

Fig. 2.—Effect of lack of oxygen on the strength of the ocular muscles. Rebreathing and low-pressure findings compared. Note return of strength on administration of oxygen, even when under low barometric pressure in the decompression chamber.

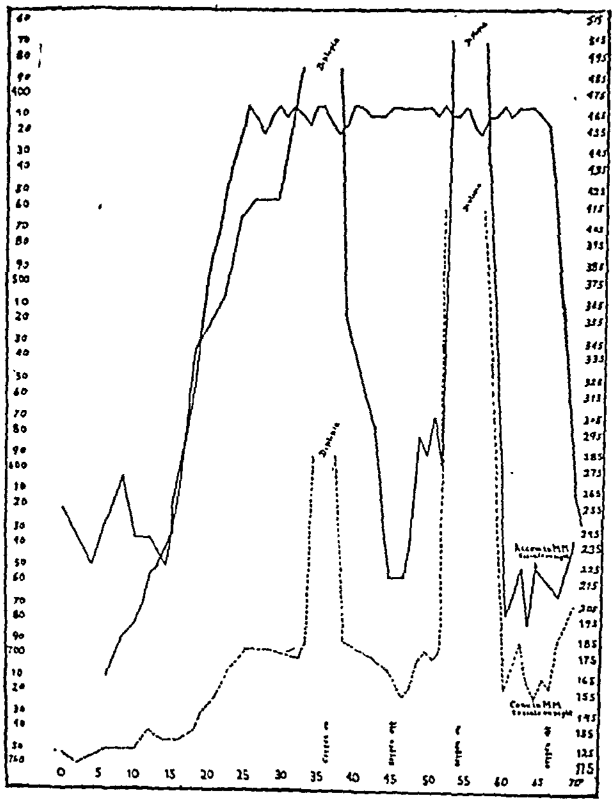

Fig. 3.—Falling off of accommodation and convergence in low-pressure chamber and return of strength on administration of oxygen.

FIELD OF VISION

Every aviator insists primarily on the broadest visual field obtainable; and in view of the fact that the research work done shows a contraction of the visual field under lowered oxygen tension, it is important to see that poorly constructed goggles do not further cut down the fields.

The fields for form and color have been taken in the low-pressure chamber at 5,000, 10,000, 15,000 and 20,000 feet; and when contraction is noted at 20,000 feet, oxygen is administered. To make sure that the changes are not due to fatigue, controls have been taken at sea level corresponding in time of day and in time interval to those taken in the low-pressure chamber. At 5,000 and 10,000 feet there is usually a slight enlargement of the fields for form and color, at 15,000 a slight contraction, and at 20,000 a marked contraction. Twenty men have been examined, and at 20,000 feet the fields for form have shown a contraction of 14 per cent. of their original size below, 3.5 per cent. in the temporal field, 4 per cent. above, and 8 per cent. in the nasal field. The red has lost 9 per cent. below, 6.5 per cent. temporally, 4 per cent. above, and 6 per cent. nasally. The green, 4.5 per cent. in the lower, 5 per cent. in the temporal, 5 per cent. above, and 25 per cent. in the nasal field. Five minutes after returning to sea level, fields are normal in size. Giving oxygen at 20,000 feet for four or five minutes causes a return of the field to normal. Several fields have been taken on the rebreathing apparatus, and the results are fairly comparable with those found in the low-pressure chamber.

PERCEPTION OF MOTION AND ITS DIRECTION BY THE RETINA

Perception of motion and its direction is of great importance to the aviator, and a test has been devised in this laboratory that will give some indication of the flier's power in this respect. The best pilots feel that by constant practice they may develop this important function to a marked degree. The test is performed with the subject seated 15 inches from a Bjerrum screen, fixing with both eyes a 3 mm. white pin placed in the screen on a level with the eye. A small light, which is visible through the cloth or neutral gray paper is used as the test object. The point at which the test object is first noted and where the direction of motion in three planes is first accurately described is recorded on a chart for use with the tangent screen. In the men examined so far, there is an average difference of 10 degrees between the time when the test object is first noted and the direction of motion is accurately described. It is hoped that this test may prove of value in the selection of aviators for special work; for example, scouting and fighting.

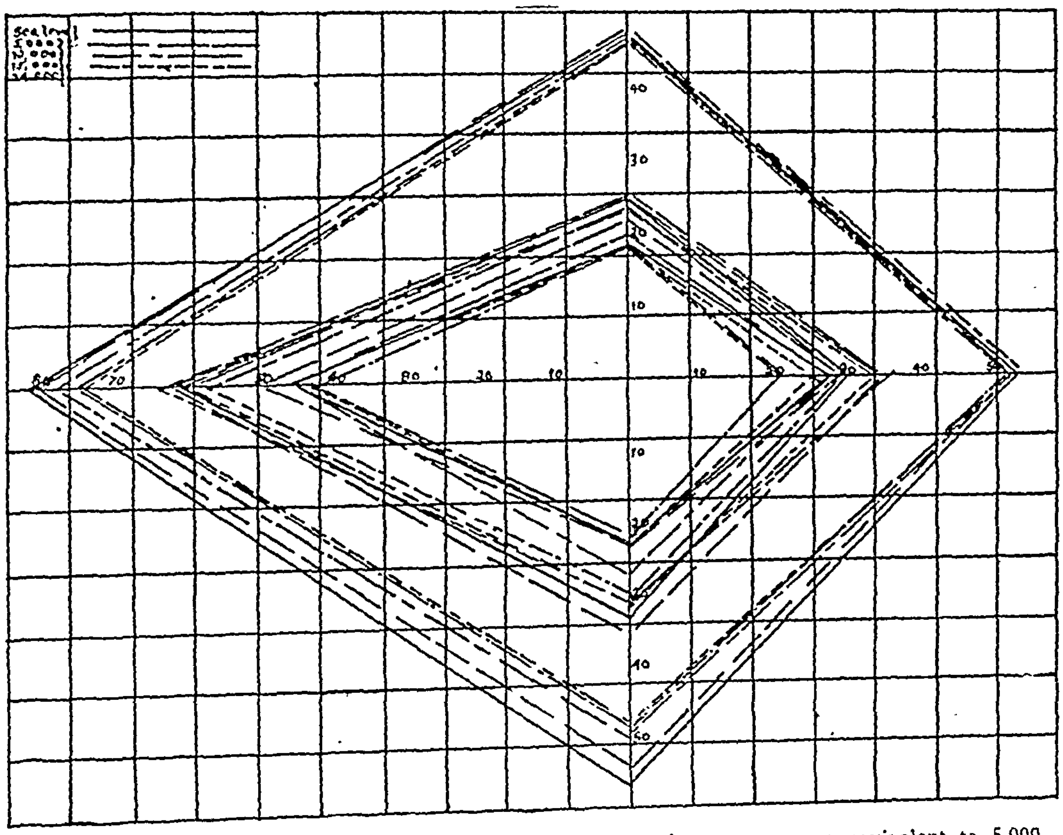

Fig. 4.—Contraction of field of vision in low-pressure chamber at pressures equivalent to 5,000, 10,000, 15,000 and 20,000 feet.

THE EYE AND THE EQUILIBRIUM

The eye is one of the many factors in the complicated problem of maintaining equilibrium. That many aviators depend largely on their visual impressions in the maintenance of equilibrium is evidenced by the fact that many of them tie a piece of string as a streamer to one of the forward struts, thus to obtain the first sign of a side slip while flying in a cloud.

INTRA-OCULAR TENSION

In connection with the various aviation problems, where there is the factor of lowered barometric pressure as well as lowered oxygen tension, the intra-ocular tension has been taken at different altitudes. Fourteen men have been examined in the low-pressure chamber. The examinations so far have not been numerous enough to draw very definite conclusions. We have found, however, no correlation between the intra-ocular tension and the blood pressure, lowered oxygen tension and various cardiovascular changes. Later on, a detailed report on this subject will be possible.

ACCOMMODATION IN FLYING

It is important that the flier maintain his ability to accommodate under all conditions to which he is subjected, for his life may depend on his ability to see clearly. The near point of accommodation has been taken every minute in the low-pressure chamber and on the rebreathing apparatus, a Prince rule with Jaeger test type or the Duane disk being used as a test object. Normal runs have been made without the low oxygen tension effect for the purpose of comparison. One hundred and forty-eight men, acceptable for the Aviation Service as fliers, were examined on the rebreathing apparatus. Of these, 44.6 per cent. showed a receding of the near point, and 18 per cent. showed improvement, fluctuating changes in accommodation were noticed in 14.4 per cent., and no change in 23 per cent. Eleven subnormal cases were examined, and 63.7 per cent. manifested a decrease in accommodative power, 18.3 per cent. an apparent increase, 9 per cent. no change, and 9 per cent. variable reactions. The low-pressure chamber findings were practically the same as those with the Henderson rebreathing apparatus. Of seventeen normal men examined, 47 per cent. showed decrease in accommodative power, 11.7 per cent. increase, 23 per cent. fluctuation, and 17.8 per cent. no change. Three subnormal subjects were examined in the low-pressure chamber; two showed a decrease in accommodative power, and the other gave a varying reaction. When the subject is brought to sea level the accommodation comes back rapidly in some and slowly in others. The inhalation of oxygen invariably causes a return to normal, even though the subject may be kept at 20,000 feet in the low-pressure chamber.

That these changes do not follow the cardiovascular reactions is shown by the fact that fifty-seven men, exhibiting acceleration of pulse rate and maintenance of pulse pressure, showed in 42.1 per cent. decrease in the power of accommodation, and 15.8 per cent. increase in power of accommodation, 15.8 per cent. fluctuation in accommodation, and 36.3 per cent. no change in accommodation. Our researches would lead us to believe that hyperopes and subjects with a marked amount of hyperopic astigmatism show the most marked changes in accommodation.

Fatigue of accommodation has been studied with Howe's ophthalmic ergograph as modified by Captain Berens. Normal three-minute runs were made without the low oxygen tension effect as controls; then three-minute runs with the same time interval were made in the low-pressure chamber and on the rebreathing apparatus. The findings on the rebreathing apparatus and in the low-pressure chamber showed, at 15,000 feet, a more rapid onset of fatigue than was evidenced by the controls; and at 20,000 feet, the fatigue was marked. The administration of oxygen in the low-pressure chamber or rebreathing apparatus rapidly restored the normal tone of the ciliary muscle.

CONVERGENCE

The near point of convergence has been tested, because of the belief that the aviator should have binocular vision and that a weakness in convergence, which might lead to diplopia, would certainly impair his efficiency and could easily result in an accident. A U-shaped piece was cut out of the Prince rule to fit over the nose, and a 2 mm. black dot on a white background was used as a test object for making this determination. Readings were taken without low oxygen tension effect and with low oxygen tension effect, and the effect of the administration of oxygen was determined. Readings were taken every two minutes and charted. One hundred and forty-seven men with normal eyes were examined on the Henderson rebreathing apparatus, of whom 50.3 per cent. showed decrease in convergence power, 17.6 per cent. increase, 11.5 per cent. fluctuation, and 20.6 per cent. no change.

Of eleven subnormal men examined (six were disqualified for visual acuity and five for muscular imbalance), 45.7 per cent. showed decrease in power of convergence. Increased converging power, fluctuating changes and no change in the near point of convergence were each noted in 18.1 per cent. Of sixteen normal men examined in the low-pressure chamber, 50 per cent. showed falling off in power of convergence, none showed increase, fluctuating reactions were present in 12.5 per cent., and 37.5 per cent. remained unchanged. In the subnormal group the recession of the near point was very marked, sometimes resulting in diplopia.

It was attempted to show what relationship, if any, exists between the convergence and the cardiovascular reactions to low oxygen tension. Seventy-two subjects showing an increase in pulse rate and a maintenance in pulse pressure gave these convergence changes, which would seem to indicate the ocular changes cannot be predicted by the cardiovascular reaction and vice versa: 54.2 per cent., decrease in power of convergence; 15.3 per cent., increase; 9.7 per cent., fluctuation, and 20.8 per cent., no change. The results would indicate that the Henderson rebreathing apparatus and low-pressure tank give almost identical findings, and in each case the determining factor seems to be the lowering of oxygen tension, because the administration of oxygen soon causes the convergence near point to return to normal, irrespective of the barometric pressure.

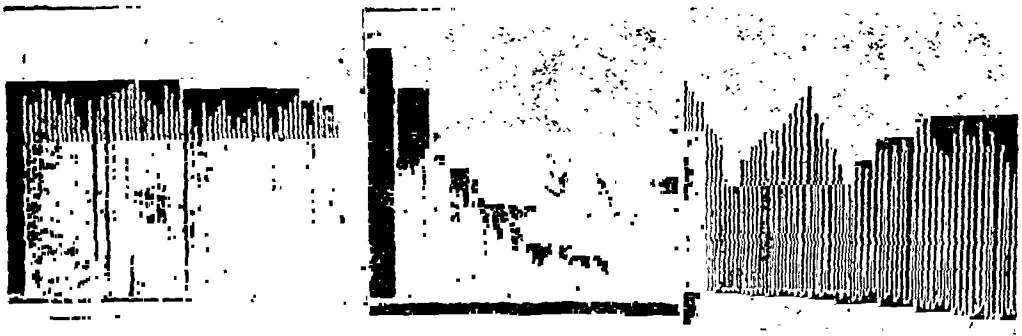

Fig. 5.—Fatigue of accommodation: Normal at sea level (left hand record); rapid fatigue at 22,000 feet in rebreathing test (middle record), and variations occurring 1.3 minutes later, subject breathing normal air (right hand record).

Fatigue of convergence has been studied with Howe's ophthalmic ergograph. Normal three-minute runs as controls were made without the low oxygen tension effect; then three-minute runs with approximately the same time interval were made in the low-pressure chamber and on the rebreathing apparatus. The findings on the rebreathing apparatus and in the low-pressure chamber showed a more rapid onset of fatigue than occurred with the controls. At 15,000 feet and at 20,000 feet the fatigue was marked, as was the case with accommodation. Here also the administration of oxygen caused a rapid return of converging power.

RETINAL SENSITIVITY

It is important that the retina be normally sensitive to light impressions, especially for those men who must fly at night, notably bombers and fliers doing patrol duty. A test for the contrast sensitivity of the retina has proved most useful and practical for our work, and only men who have normal sensitivity in this respect will be selected for night flying.

In this laboratory, tests to determine the threshold sensitivity of white and colored lights and for contrast are conducted in the following manner:

The Reeves wedge is made of two pieces of glass at a known angle, between which is run a solution of gelatin and neutral dye. The wedge is calibrated in millimeters, which is translatable into the percentage of light transmitted.

To test the threshold sensitivity to light, the subject is placed 20 feet from a spot of light, 3 mm. in diameter. Holding the wedge before the right eye, he slowly draws the slide from its cover, and as the light just disappears, a reading is taken. This reading is in millimeters and is then translated to percentage of transmission.

The threshold for color is taken the same as the foregoing, red and green lights, which are practically monochromatic, being employed.

The test of contrast sensitivitiy is made with a Reeves wedge and Reeves contrast square. The contrast square is made by placing a square of dark gray paper on a larger square of lighter gray, there being thirteen perceptible differences between the two papers. An illiterate "E" with the same perceptible differences is used as a check of the findings. This is lighted by a 75-watt nitrogen daylight lamp at a given angle and distance from the test object, and the subject is placed 20 feet in front of the object. The reading on the wedge is taken just as the contrast between the squares disappears. The average readings taken with the contrast sensitivity square gives 3.4 mm., and the illiterate

"E" 3.2 mm. To date, the normal for the light threshold of thirty-five subjects is 6.5 mm. The threshold for colors is: red, 4.4 mm., green, 3.7 mm.

Under the rebreathing test the threshold for light has shown an improvement in 25.9 per cent.; 44.5 per cent. show neither improvement nor falling off, and 29.6 per cent. show a falling off in sensitivity.

In the study of the threshold for colors, the red and green both show a falling off in 71.4 per cent., and neither a gain nor a loss in 28.6 per cent.

In former tests with a blue light, which was not absolutely monochromatic, there was improvement in 66.6 per cent. and falling off in 33.4 per cent.

CONCLUSION

In spite of the fact that the tests made in the laboratory are influenced somewhat by the psychologic elements of excitement, concentration, etc., still, we have found very sensitive and definite ocular reactions under the conditions to which the airman is subjected. The changes in the eye (one of the most delicate of the peripheral sense organs) are due mainly to the want of oxygen, and not to the many other suggested conditions, such as lowered blood pressure, decreased atmospheric pressure, carbon monoxid, nervous strain, and vibration of the motor. In our experience, the administration of oxygen prevents the occurrence of the untoward symptoms; but when these symptoms have occurred through its want, oxygen quickly restores the functions to normal.

VI. INFLUENCE OF ALTITUDE ON THE HEARING AND THE MOTION-SENSING APPARATUS OF THE EAR*

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The middle ear mechanism is normally adjusted to transmit sound vibrations in either direction. Ordinarily this apparatus is largely occupied in transmitting sound vibrations from without inward. The membrana tympani is set into vibration by impact of vibrations transmitted by the air in the external auditory canal, and the ossicular chain carries the vibrations across the tympanic cavity to the footplate of the stapes, which, with its annular ligament, fills the oval window. The perilymph there receives the impact, and owing to the venting action of the internal drumhead of the round window, this incompressible fluid is enabled to take up the vibrations and distribute them by way of the saccule and cochlea in such a manner as to bring about interaction between the sensory cells of Corti and the tectorial membrane. This stimulation causes these cells to emit nerve impulses which are translated in the sensorium into hearing.

Whereas the conformation of the auditory canal, tympanic cavity, saccule, scala tympani, and scala vestibuli is such as to facilitate delivery of most of the incoming vibrations to the cells of Corti, the petrous bone conducts a certain amount of the incoming vibrations away from their ultimate cochlear distribution.

Any obstruction in the path of these vibrations determines an increase in the conduction of sound vibrations away from the Corti cells, and the volume of such afferent vibrations is directly proportionate to the amount of obstruction.

Sound vibrations are also conducted to the tympanic cavity by way of the bony structures of the skull, and a certain amount of such vibrations are conducted away from Corti's cells by way of the ossicular chain, membrana tympani and thence the air in the external auditory canal.

By utilizing certain uniform sound stimuli applied in the form of standard tests and observing responses, it is possible to determine the normality of sound conduction and sound perception; also the general character of certain abnormalities of sound conduction and sound perception.

The motion-sensing mechanism of the internal ear is situated within an intricate physical instrument, the utricles and semicircular canals; one half of this physical instrument is housed in the right petrous bone, the other half in the left. Motion to which this instrument is subjected is immediately participated in by the fluid contained within it and brings about an interaction between the hairs of the sensory cells of the cristae and the cupula surmounting them, causing stimulation of these sensory cells and emission of nerve impulses, which are translated in the sensorium as sense of the body being in motion. A certain quotum of these impulses originating in the cells of the cristae are distributed as motor impulses to the extra-ocular muscles, causing involuntary movement of the eyes.

By utilizing certain uniform motion stimuli applied in the form of standard tests, and observing responses in a certain standard manner, it is possible to determine the normality of motion perception of this apparatus, and of eye movements resulting from stimulation of the cells of the cristae; also the general character of certain abnormalities of motion sensing and of eye movements.

Without going into the details of standard tests of the cochlear and vestibular (or motion-sensing) portions of the ear, which would entail a discussion too voluminous for presentation in this connection, it may be briefly stated that experiments have been conducted with a view to determining the effects of altitudes on each of these ear functions. In these experiments, both the Henderson rebreathing apparatus and the decompression tank types of artificial altitude have been utilized.

It has been determined that the hearing function shows no deterioration attributable to impairment of the perceptive element (stimulability of the Corti cells) prior to attaining a degree of altitude that causes acute general functional impairment of all the higher cerebral sensory and psychic centers. This condition is signalized by the onset of semiconsciousness or unconsciousness.

During ascent from a denser to a rarer atmosphere, the sound-conducting apparatus may show transitory interference with function attributable to expansion of air incarcerated within the eustachian tube, tympanic cavity or air spaces of the mastoid resulting in inequality of intratympanic and extratympanic air pressures. As adjustment of these air pressures occurs by venting through the eustachian tube, interference with function of the sound-conduction apparatus ceases.

Such disturbances are much more marked during rapid descent, when the discrepancy between intratympanic and extratympanic air pressure becomes very marked. Cases have been observed in which the extratympanic pressure was so great as to cause perforation of the drumhead. Practically all cases showed congestion of the drumhead following rapid descent. Occasionally the irritation and congestion resulting from rapid changes of altitude have been observed to cause acute otitis media.

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*From the Medical Research Laboratory, Air Service, Mineola, L. I.

Observations on the effects of altitude on the motion-sensing function of the ear have revealed nothing in the nature of obtunded ability to perceive motion or alterations in eye reactions to motion stimulus. Certain individuals showed greater inability to tolerate motion stimulus at 16,000 to 18,000 feet than they had shown at the accustomed altitude, as evidenced by the onset of nausea and vomiting. This, however, may be regarded as indicative of the onset of altitude sickness (ordinary "mountain sickness") rather than of altered vestibular function.

VII. EFFECTS OF LOW OXYGEN PRESSURE ON THE PERSONALITY OF THE AVIATOR*

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MINEOLA, L. I., N. Y.

The effects of diminished oxygen supply on the personality cannot be explained until the results of the reduction on the functions of different organs have been made known. Until this information is gathered, our views on this subject are based to a great extent on a review of clinical data, illustrating some of the changes of temperament and character of the aviator taking place in the effort to adjust the organism to high altitudes.

Before reference is made to a few of the symptoms already noted, it is desirable to remind the reader of the fact that the problems involved in the study of any personality are not merely psychologic, but should include the biologic analysis of the reactions of the entire organism, considered as a living unit. It is extremely important that this point of view should be appreciated and accepted by the investigator. A personality study is a great deal more than a mere psychologic analysis, and often the correct interpretation of emotional and mental reactions is to be sought in the solution of some complex biologic problem.

Among the more frequent phenomena associated with reduced oxygen pressure is an increased irritability of the reflexes, particularly noticeable in very active knee-jerks. Sometimes there is a reduction of the knee-jerk, due to an apparent hypertension of the muscles and an inability to relax them. In these cases reinforcement is necessary in order to bring out the knee-jerk. This evidence of increased muscular tension in connection with the aviator is an interesting phenomenon, and deserves careful consideration. Probably impulses from the higher cortical centers are responsible for this interference with the tendon reflexes. In order to facilitate the study of these reactions it is desirable that the capacity of the aviator to relax his muscles should be tested before as well as after flying. The muscles to be tested should include those of the face, head and neck as well as the arms, legs, hands and feet. In some cases the increased tension seems to be localized. An aviator who is capable of relaxing his limb muscles may show a very tense condition of his facial muscles, or vice versa. The mental tension is reflected in many different ways. Those who suffer from the effects of reduced oxygen supply generally give some indication of this trouble in their facial expression. Varying degrees of anxiety may be represented, ranging all the way from the indefinite expression, accompanying the ill defined consciousness that some impossible task or unpleasant experience is impending, to a state of mind indicating that well formulated ideas play an important rôle in the disturbance, causing not merely apprehensiveness but also an anxiety in which intellectual processes have become active determining factors. In the indefinite states of apprehensiveness and ill defined anxiety the reactions correspond to the conditions described by the French as *angoisse*, a condition in marked contrast to the one described as *anxiété*, in which the disturbances of the higher mental responses are more strikingly in evidence than are the bulbar symptoms, marked by disorders of the circulatory, respiratory and other physiologic systems.

The occurrence of specific sensations of pain are indicative of local disorders, but the evidences of bodily and mental distress and the varying degrees of discomfort and unpleasantness evoke a variety of symptoms. Not infrequently these signs of imperfect adjustment to life in the air are intensified by conflicting trends: one a desire to continue in the Air Service and the other a consciousness of not being equal to the task. The failure of the aviator to face the dilemma squarely and settle the conflict definitely invariably leads to complications often ending in a serious loss of nerve and morale.

Mental disturbances of this character occurring as the result of lowered oxygen supply at times become sufficiently accentuated to suggest the beginning complex associated with an anxiety psychosis. In addition to the emotional disorders there is generally a very slight incoordination of the finer muscular movements, and often a marked fine tremor of the fingers and tongue.

It is interesting to note that from time to time clinicians have suspected the occurrence of some defect in the amount of oxygen supplied in connection with the various forms of anxiety neuroses. Using a form of treatment based on empiricism, attempts have been made to remedy this condition. The French clinicians for some time have recommended that oxygen be administered in these neuroses; and one or two different forms of apparatus for giving the oxygen by subcutaneous injections have been used with varying degrees of success.[1] The amount of pain accompanying the injections and the difficulty in perfecting the technic have been the chief objections to the use of this method of treatment. Heckel[1] says the method of administration that he has devised obviates these defects.

Unquestionably the administration of oxygen to a person who has been subjected to an experimental test or has ascended to a high altitude in a plane is followed by a number of interesting reactions, which have not received the attention they deserve.

We have noted that the character of the dermagraphia in a person who has been deprived of oxygen changes completely after oxygen has been inhaled for one or two minutes. The blotching character of the red line noticeable in states of fatigue, as well as following a period of reduced oxygen supply, disappears after the inhalation, and the puckering of the skin and clear edges of the line suggest that a decided improvement in the vascular tone has taken place.

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* From the Medical Research Laboratory, Air Service, Mineola, L. I.

[1] Heckel, F.: La neuroses d'angoisse, Paris, Masson & cie, 1917, p. 496.

THE OCCURRENCE AND SIGNIFICANCE OF B. WELCHII IN CERTAIN WOUNDS*

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It is well known that *B. welchii* is usually very common in early wounds. Studies by Fleming[1] in 1914-1915 showed its presence in 81 per cent. of 127 wounds from one to seven days old; in 34 per cent. of fifty-six wounds of from eight to twenty days, and in 18.5 per cent. of wounds more than twenty days old. Goadby[2] presents figures for the occurrence of anaerobes in wounds, but none for the incidence of *B. welchii* in particular. He found a markedly less percentage of saccharolytic and ensporing anaerobes in excised than in nonexcised wounds. Plisson[3] found harmless persistence of *B. welchii* until the tenth day in twenty-two of 186 cases, and in three beyond the fifteenth day. Taylor[4] proved the presence of gas-forming bacilli on sequestrums in 14 per cent. of a series of wounds with sequestrums aged from forty-five to 300 days.

Taylor's figures show that *B. welchii* can occur and persist for a very long time on bone and in deep parts of wounds. Whether cultures from the exudate would be positive in these cases is a different question. Taylor considers the persistence to depend on the protection of the bacteria from the body fluids; hence it seems improbable that the bacilli would appear in the exudate taken by the usual cultural methods.

Since the observations recorded here were made partly to discover as far as possible the significance of the usual cultural examination of wounds for *B. welchii*, cultures were taken by the routine methods, which consisted in (1) taking specimens of the exudate on cotton swabs; (2) planting in recently boiled and cooled milk of neutral reaction, and (3) anaerobiosis by the pyrosoda method of Wright or by the hydrogen and palladium asbestos method. Milk is not quite so good a cultural medium for *B. welchii* as glucose bouillon, for it takes a slightly heavy inoculation to get growth. It is used, however, because it is the only practicable method of getting a characteristic culture in twenty-four hours, and hence is the usual routine test. No culture method gives growth with doses under a certain size; hence the absolute presence or absence cannot be ascertained in any event.

The points especially considered here are: (1) the occurrence of *B. welchii* (as determined by the usual culture test) in wounds at a base hospital during a quiet period when casualty clearing station treatment is thorough; (2) the occurrence of gas infection in the same series and its relation to the occurrence of *B. welchii;* (3) the persistence of *B. welchii* after gas infection, compared with its persistence in wounds in which no gas infection has occurred; (4) the value of examination for *B. welchii* in regard to the diagnosis of cases of gas infection occurring in excised wounds, and (5) the relation of *B. welchii* to suture.

THE OCCURRENCE OF B. WELCHII IN WOUNDS AFTER THOROUGH CASUALTY CLEARING STATION TREATMENT

It seemed probable that a quiet period would afford an opportunity to determine the effectiveness of casualty clearing station treatment, when at its best, in reducing the occurrence of *B. welchii* in wounds. During the time of the study, a culture was taken of each wound at the first dressing or soon after, of patients arriving at the hospital. Only wounds involving muscles were included. Trivial wounds and clean bullet wounds were eliminated. A consecutive series of 137 cases was thus obtained.

B. welchii was proved present by culture in 23 per cent. of the cases. Of nineteen wounds of one day, *B. welchii* occurred in 26 per cent. Of forty-four wounds of two days, it was found in 20 per cent.; in twenty-seven wounds of three days, in 19 per cent.; in thirty-five wounds of from four to seven days, in 25 per cent., and of four wounds of from eight to ten days, in 50 per cent. Eliminating the figures for eight to ten days as based on too few cases, the occurrence is markedly uniform in wounds of the different ages.

The occurrence of the same or a higher incidence in older cases is explicable by the fact that these patients came late to the hospital, largely because they had unusually severe wounds or had had a previous gas infection at the casualty clearing station. In view of the persistence of *B. welchii* after gas infection (described later), the incidence was calculated in wounds that had not had a previous gas infection. The incidence for wounds up to four days remained the same, but for wounds of from four to seven days it fell from 25 to 16 per cent., and for the whole series from 23 to 19 per cent.

Smear examination was done merely to obtain a rough idea of the numbers of *B. welchii* present. As a rule, only two distinctions were made: (*a*) those having no *B. welchii* or extremely few, so that a considerable search was necessary to find them; these are called negative; (*b*) those having more; these are called positive.

The incidence of cases with positive smear and culture (eliminating cases with previous gas infections) was: in one day wounds, 18 per cent.; in wounds of two days, 18.6 per cent.; in wounds of three days, 8 per cent.; in wounds of from four to seven days, 11 per cent., and in the series as a whole, 14.5 per cent.

These low percentages for the occurrence of *B. welchii* seem to indicate extremely effective previous treatment. The influence of excision at first seems to be absent, for of the cases in which excision was performed, according to the field medical card, *B. welchii* was present in 23.5 per cent., while of those not stated to be excised it was present in 19.4 per cent. The explanation lies in the fact that the more severe wounds are the ones that are excised and are also the ones in which *B. welchii* is most likely to occur. Eliminating cases with previous gas infection, the occurrence of *B. welchii* in the excised wounds is not lower than in the nonexcised. These results suggest, at least, that good judgment was used in performing excision, giving a very uniform output of cases.

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*From U. S. Army Base Hospital No. 5.

[1] Fleming, Alexander: The Bacteriology of Septic Wounds, Lancet, London, 1915, 2, 638.

[2] Goadby, K.: The Bacterial Flora of War Wounds, Brit. Med. Jour., 1918, 1, 581.

[3] Plisson, L.; Ramond, and Vergelet, C.: The Bacterial Flora of War Wounds, Bull. Soc. Méd. d. Hôp. de Paris, Dec. 21, 1917, p. 1302.

[4] Taylor, K.: Persistence of Bacteria within Sequestra, Ann. Surg., 1917, 66, 522.

Goadby's finding of a higher percentage of saccharolytic anaerobes in nonexcised than in excised wounds has only the appearance of differing from these figures. His nonexcised cases included nearly all cases at a period when excisions were little done, while his excised wounds occurred at a different period when the percentage of excisions was high. Consequently each of his series included wounds of all sorts, while in this series the nonexcised were merely the lighter wounds left over after the severe ones had been done.

INCIDENCE OF GAS INFECTION IN THE SERIES

Definite muscle gas infection after arrival occurred in the series in 2.9 per cent. of the cases. If a few slightly doubtful cases are included, the total is 5.1 per cent. Of the cases with *B. welchii* on culture, unquestionable gas infection occurred in 13 per cent.; including slightly doubtful cases, the figure becomes 22.5 per cent.

THE PERSISTENCE OF B. WELCHII IN THE WOUNDS

The cases in which *B. welchii* was found were followed, as far as possible, until the cultures became negative. Usually more than one negative examination was obtained. Besides the cases in this series, records are included from a previous series of 200 nonconsecutive cases.

In the cases without gas infection, a fairly marked change from positive to negative was evident by the eighth day of the wound. Before this, 30 per cent. had become negative; but after this day, only 17 per cent. remained positive, and these for a short time, as a rule.

Of the cases with gas infection, the period of change from positive to negative cultures was not evident until about the twelfth day of the wound; before this, only 12 per cent. had become negative; while afterward, 36 per cent. remained positive.

Thus there is evidently a greater tendency for the persistence of *B. welchii* in wounds having muscle infection. This is in spite of the fact that each case of gas infection had thorough removal of débris and excision, and in each case the symptoms of an active infection stopped immediately after the operation. Even if the reckoning is made from the time of the operation as a starting point, the period of change comes on the tenth or eleventh day. The persistence was remarkable on casual observation before the figures were obtained.

A persistence in noticeable numbers in smears occurred in the gas infection series until about the eighth day of the wound. There seemed to be a fairly regular diminution in numbers until the eighth day, and 43 per cent. had become negative by that time, while 20 per cent. remained positive beyond the eighth day. In the cases without gas infection, more than 75 per cent. had become negative before the eighth day, and only 15 per cent. remained positive beyond it.

These figures indicate the tendency to persist longer in moderate numbers when a gas infection has preexisted. In fact, in wounds without gas infection the tendency is strong for bacilli to become very few early in the history of the wound. Half of the smears had become negative by the fifth day, while by that time only 18 per cent. had become negative on culture. Of the gas-infected cases, however, only 12 per cent. of the smears had become negative by the fifth day, and none by culture.

These results suggest that *B. welchii* does not flourish long in surface exudate. The time of persistence in gas infection cases, with the gradual diminution in numbers, suggests either foci of infection, gradually overcome, superficial growth in the exudate, or a gradual exudation of the bacteria from the previously infected tissues. Local foci of active infection seem extremely unlikely in view of the thorough operation in each case, and the entire absence of clinical evidence of infection. A superficial growth in the exudate might account for the early persistence in considerable numbers; but the long, late persistence in numbers practically imperceptible in the smear suggests rather gradual riddance of the bacteria from the infected muscle. Such a process would also account for the large numbers soon after operation. Pathologic studies show the presence of *B. welchii* beyond the area of apparent infection, and it is often easy in cases of heavily infected wounds to demonstrate the passage of bacteria from within the infected wall.

The marked tendency to early dying out in numbers in cases not infected is additional evidence of the difficulty of the continued growth of *B. welchii* in surface exudate in open wounds. There are always a certain number of cases of slight local gas infections which are not noted clinically. It seems probable that this must account for a certain number of the instances of persistence in the cases classified as not infected. This makes the probable true persistence in moderate numbers very small. The later persistence in very small numbers is probably to be explained by the presence of small foci, such as pockets, in which favorable anaerobic conditions are obtained; it is most noticeable in very large wounds which are apparently quite open, but in which, on account of the magnitude of operation, it is difficult to carry out a complete excision or removal of débris.

THE VALUE OF EXAMINATION FOR B. WELCHII

It is apparent on examination of the slides that in cases of active gas infection, bacilli are usually present in much larger numbers than in wounds of the same age without gas infection. Thus, of the wounds of from one to three days with *B. welchii* on culture but without gas infection, 40 per cent. showed negative smears; 46 per cent showed very moderate numbers, and only 4 per cent. showed fairly large numbers. Of the gas-infected cases (twenty in number), 5 per cent. showed negative smears, 40 per cent. moderate numbers, and 55 per cent. large numbers. Thus the finding of large numbers of *B. welchii* in well excised wounds of from one to three days seems strong presumptive evidence of active gas infection. (It may be remarked that of these particular gas-infected wounds, practically all had been excised.) The older the wound, the stronger the evidence.

If the cultures are positive but the smears negative, or if the cultures are negative, it is somewhat strong evidence against gas infection. It is not at all conclusive evidence, for in certain cases of gas infection, *B. welchii* may be absent altogether. In other cases, in which *B. welchii* is a factor, the infection may begin about a foreign body deep in the wound and the culture be negative. It does not seem likely that these cases make as much as one fifth of the cases of gas infection.

If moderate numbers occur, the evidence is of little more value than is obtained by culture alone.

The presence by culture alone reduces the chances from 1:30 against a given wound in this series being gas infected to 1:7, and hence is so slight evidence to be hardly worth considering.

It should be emphasized that these figures apply only to wounds of the special character described. It seems probable that in wounds before excision or when excision is not carefully done, neither smear nor culture can afford very valuable evidence on account of the common occurrence of *B. welchii.*

RELATION TO SUTURE

Of nine cases with *B. welchii* on culture at time of suture, two were failures, developing gas infection, and one a part failure. Of the remainder, *B. welchii* persisted, with positive smears, harmlessly for various periods after the suture; in two cases it persisted for three days; in one, for four days, and in two, from one to two days. One case of positive culture was obtained five days after suture. The two cases of failure were in wounds of from one to two days, and large numbers of *B. welchii* were present in each case. In no successful case were more than very moderate numbers present at the time of suture. As far as the evidence of this small number of cases goes, it does not seem that the mere presence of *B. welchii* is a contraindication for suture, but that its presence in large numbers is. In none of the cases were streptococci present. The significance of the presence of *B. welchii* may be entirely different when associated with various organisms.

SUMMARY AND CONCLUSIONS

1. In a consecutive series of 137 wounds aged from one to eleven days, in patients arriving at a base hospital during a quiet period after thorough casualty clearing station treatment, *B. welchii* was obtained by culture in 23 per cent. Cases with more than extremely few *B. welchii* organisms on smear made 14 per cent. of the series. These figures are much lower than for wounds during rush periods, or for wounds before excision was common.

2. The small difference in the occurrence of *B. welchii* in the series in the excised, compared with the nonexcised, is due to good judgment in excising especially the wounds in which *B. welchii* is most apt to be present.

3. Definite muscle gas infection occurred in 2.9 per cent. of the series. Including slightly doubtful cases, the incidence is 5.1 per cent. Of the cases with *B. welchii* on culture, the cases with unquestionable infection number 13 per cent., and including the slightly doubtful cases, 22.5 per cent.

4. For further studies, cases of gas infection were included from a previous nonconsecutive series. These were practically all in excised wounds. It was found that the cultures for *B. welchii* tend to become negative by the eighth day when no gas infection has occurred, but to last until the twelfth day or later in the cases with gas infection. Even reckoning the day of operation as the starting point, persistence is distinctly greater in the gas-infected wounds. This is in spite of complete lack of evidence of active infection after the thorough operation performed in each case.

5. There is a definite tendency to persist in greater numbers until the eighth day in the gas-infected cases than in those not infected.

6. In cases without gas infection, the numbers of bacilli tended to become very small early in the history of the wound.

7. The results suggest that *B. welchii* does not flourish long in surface exudate. Persistence in cases without gas infection is probably due largely to previously unrecognized local infection, or to small anaerobic foci in large wounds in which a thorough excision was impracticable. The persistence after gas infection may be explained by a gradual riddance of the bacilli from invaded but not definitely altered tissues.

8. In wounds of the character of this series, the presence of *B. welchii* in large numbers is good evidence of an active gas infection. The evidence is stronger, the older the wound. Its absence is strong but not conclusive evidence of lack of infection, for negative cultures are occasionally obtained when *B. welchii* is not a factor in the infection, or when the infection begins deep about a foreign body.

9. If moderate numbers of *B. welchii* are present, the evidence is of about the same value as is given by culture alone. The value of culture alone is so slight as scarcely to be worth considering.

These facts with regard to the value of smear and culture with reference to the diagnosis of gas infection in these wounds appear to rest on the inability of *B. welchii* to grow luxuriantly for a long period on the surface of surgically cleaned wounds, thus preventing the occurrence of large numbers when no infection is present; and on the occurrence of large numbers of *B. welchii* in the exuded serum of the infected cases, thus causing the highly positive smears.

10. The statements made here probably do not apply to wounds that have not had thorough previous surgical treatment.

11. The presence of *B. welchii* in large numbers was a contraindication to sutures in the small series observed. Its presence in small numbers is not necessarily a contraindication. There are points here in connection with the association of bacteria that need investigation. *B. welchii* may persist harmlessly as long as five days after suture.

"Team Work" by the Medical Profession.—In a summary of that portion of the Cavendish lecture by Sir Bertrand Dawson relating to the future of the medical profession, the *Medical Officer* quotes him as having said that the growth of knowledge makes measures for the prevention and cure of disease more and more complex, so that the full exercise of these powers no longer lies within the scope of individual effort but requires for its accomplishment well organized "team work." In the future, investigation will become more and more technical and collective treatment correspondingly specialized. This renders the patient's home less suited for his treatment and the need for institutional facilities all the greater. Sketching the scheme which he would consider best for fostering a closer union between the health organization of the community and the intellectual and professional life of the doctors, he said that the nucleus of this system of medical service would be the hospital. Local hospitals and clinics would be grouped in relation to central and teaching hospitals in the larger towns, and there would be corresponding relationship between the local practitioner and the consultant of the district. From this it would follow that the practitioner's source of income would be more in the nature of a salary than of fees, but this would not mean the extinction of private practice. A full-time salaried service for all medical men he regarded as detrimental to the best interests of both doctor and patient, for medicine stereotyped under such a system would become a "soulless machine."

BLOOD TRANSFUSION AT THE FRONT AREA *

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This paper is based on observations of transfusions of blood performed at advanced hospitals. The patients were those having but little prospect of recovery otherwise.

Donors.—Arrangements were made through the medical officer, with the sergeant in charge of the walking wounded, to supply lightly wounded men for donors. As the occasion required, those selected were sent to the resuscitation ward for grouping and charting. A grouped list of all donors was available at a minute's notice, day or night. A list of about ten donors, usually assigned to light duty around nearby wards, was kept at all times. As economy we used Group II, III and IV men. Some casualty clearing stations use only Group IV donors, and do not group their patients; however, we found that it required about ten minutes to group a patient, and thus, we were able to use all donors excepting the group I men.

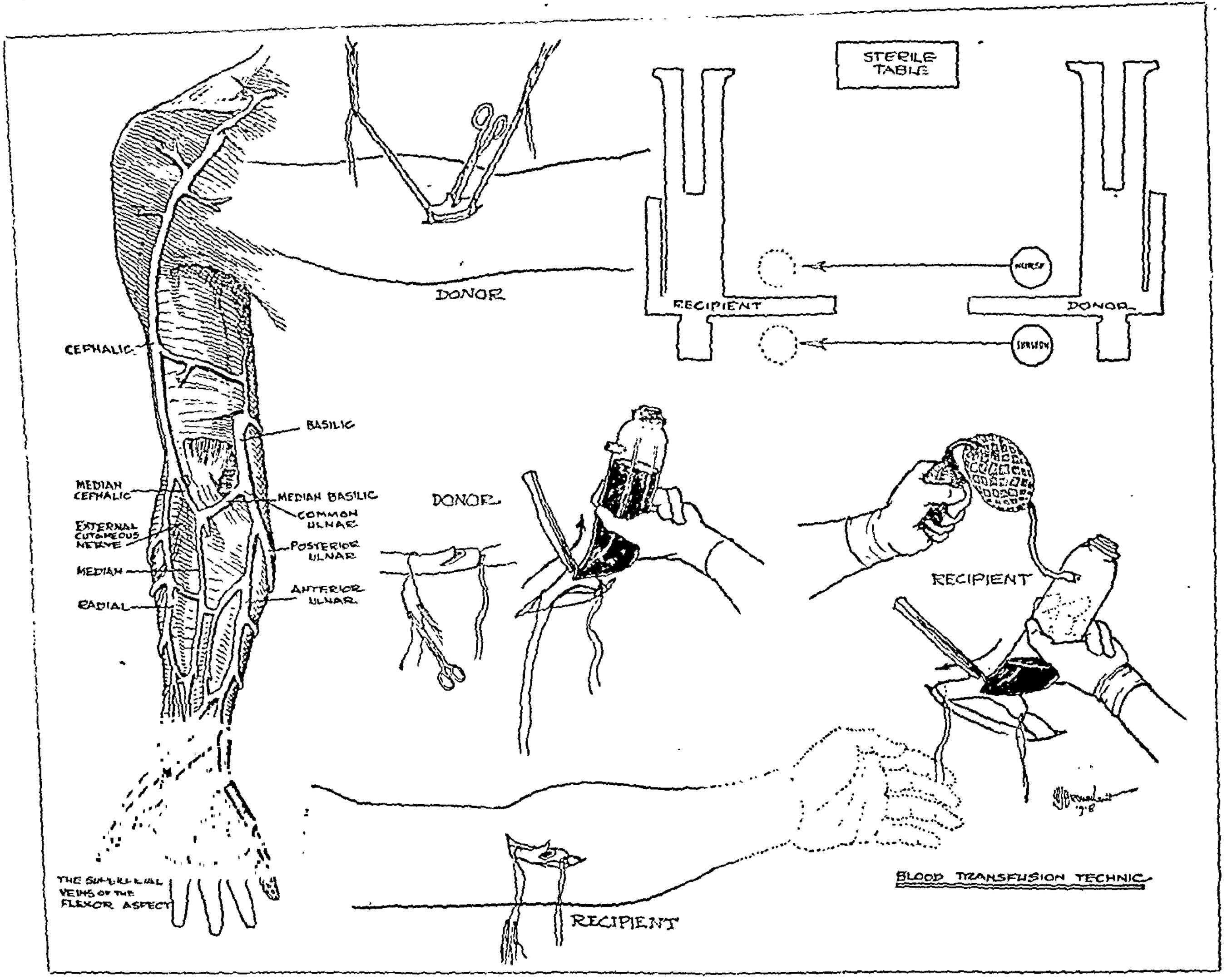

Fig. 1.—Technic of blood transfusion.

Grouping.—The selection of donors and the grouping of recipients was done by the method described by Lee,[1] with serums and necessary equipment furnished by Captain Karsner.[2] By holding the slide over a candle, the reactions were judged with the naked eye. All cases were classified without difficulty. The technic was so simple that it could be carried out in the resuscitation ward, proving very practical from all points of view.

Technic of Transfusion.—The indirect method of transfusion was used, with the technic as shown in Figure 1. The tubes were coated with ordinary hard paraffin obtained from the pharmacy at the casualty clearing station.

A vein of the flexor aspect of the arm was used, 3 c.c. of 1 per cent. procain being used for infiltration anesthesia. The proximal end of the donor's vein was tied, and the distal end of the recipient's, a ligature loop being placed around the distal end of the donor's vein and the proximal end of the recipient's. Traction by means of a hemostat closed the veins.

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* From No. 9 (Lakeside, U. S. Army) General Hospital.

[1] Lee, R. I.: A Simple and Rapid Method for the Selection of Suitable Donors for Transfusion by the Determination of Blood Groups, British Medical Journal, 1917, 2, 684.

[2] Karsner, H. T.: Transfusion with Tested Bloods, Including the Grouping of One Thousand Bloods and a Method for Use at Advanced Hospitals, The Journal A. M. A., March 16, 1918, p. 769.

In our series of cases, there was not an instance of coagulation in the tube. The average time for filling each tube of 300 c.c. capacity was three minutes; for the entire transfusion, approximately thirty minutes.

Differential Diagnosis—Hemorrhage and Shock.—From a clinical point of view, it is very difficult, in some cases, to know whether a patient is suffering from hemorrhage, from shock, or from both. In the three conditions, the pulse, the blood pressure and the collapse are not dissimilar. In hemorrhage, however, the patient is generally restless and anxious or worried about his condition. A shock patient, on the other hand, is inclined to be listless and apathetic. In extreme cases of shock, the patient is almost invariably of a grayish-blue color, this symptom being attributed by Crile to a failure of internal respiration.

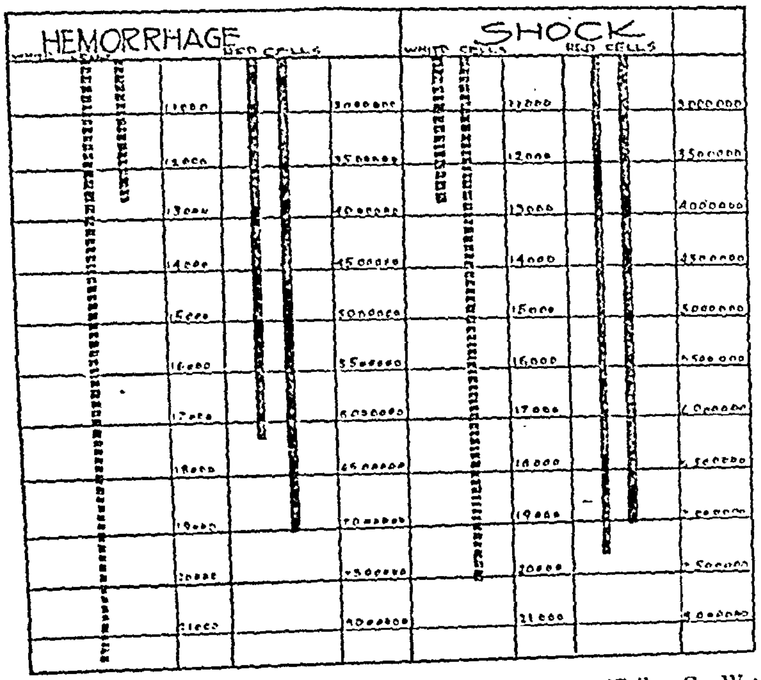

Fig. 2.—Blood counts in shock and hemorrhage. (Crile, G. W.: Hemorrhage and Transfusion, p. 111.)

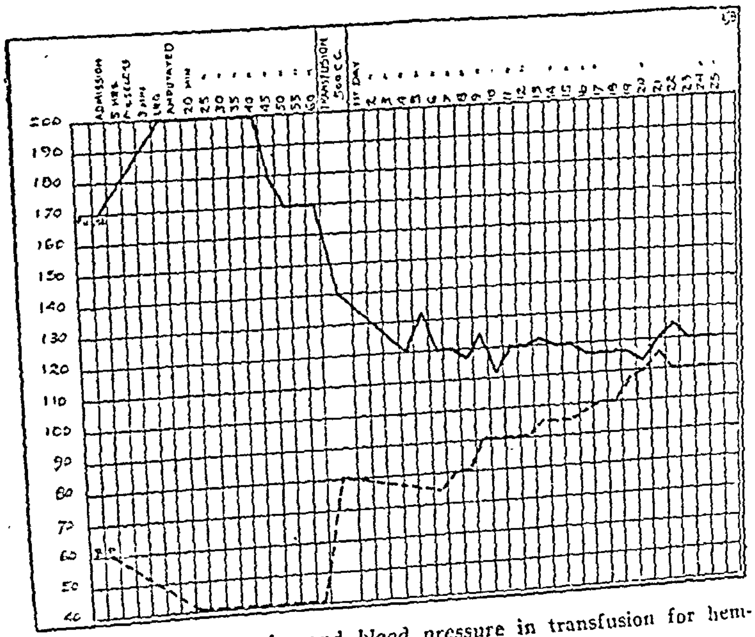

Fig. 3.—Curve of pulse and blood pressure in transfusion for hemorrhage.

As a practical measure, I would suggest that a note be made on the field card by the medical officer at the field ambulance, indicating the amount of hemorrhage.

Increase of White Blood Cells in Hemorrhage.—In hemorrhage, we found a definite increase in the white blood count, confirming the observation of Crile.[3] However, our series showed a blood count, in severe cases, amunting to 45,000. In shock, on the other hand, we found no increase in the white blood count. Nearly all our cases were examined under eight hours after injury (Fig. 2).

Transfusion for Hemorrhage.—In acute hemorrhage, transfusion of blood is specific, provided the patient has not been in an exsanguinated state long enough to cause irreparable injury to the brain. The effects generally are striking, immediate and permanent. In our series, we had only one case in which transfusion was useless, owing to this fact.

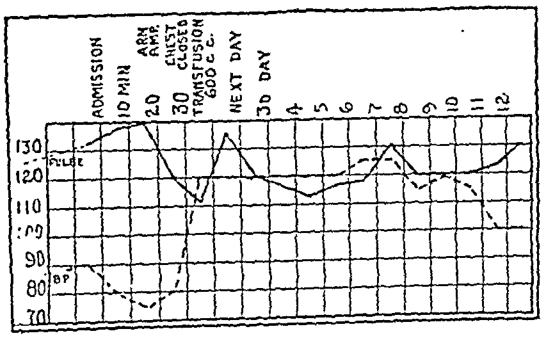

Fig. 4.—Curve of pulse and blood pressure in transfusion for shock and hemorrhage.

Transfusion of blood is followed by a marked rise of blood pressure, increase in pulse volume with slowing of rate, while respiration returns to normal (Fig. 3).

Transfusion for Hemorrhage and Shock.—In cases in which there was both hemorrhage and shock, transfusion proved effective, but the results were not as good as those following transfusion for hemorrhage alone (Fig. 4).

Transfusion for Shock.—In shock without hemorrhage, if the patient had not yet reached the gray-blue stage, a certain amount of benefit followed transfusion of blood—a change often sufficient to carry through operation to recovery. If, however, the patient *had* reached the gray-blue stage, no benefit resulted from transfusion (Fig. 5).

In a series of fifty transfusions, in cases in which recovery by the usual course was *not* expected, 55 per cent. of the patients recovered. Two of the patients died of pneumonia. In several, with gunshot wounds of the abdomen, transfusion was of no avail. In a few of the most severe cases of gunshot wounds of the abdomen we gave 200 c.c. of blood three days in succession, following the primary transfusion. However, this treatment showed no more improvement than in those cases in which transfusion was performed at one séance, provided sufficient blood had been given at the primary transfusion.

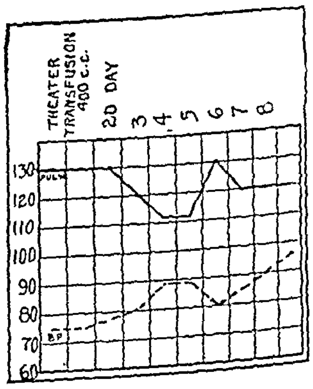

Fig. 5. — Curve of pulse and blood pressure in transfusion for shock.

Only once was there a slight reaction. This man underwent transfusion for hemorrhage from a severed

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3. Crile, G. W.: Hemorrhage and Transfusion, New York, D. Appleton & Co., 1909, p. 111.

popliteal artery. Fourteen days later the leg was amputated. A severe hemorrhage followed the operation, so that the man was again transfused. On the third day, a slight rash, not unlike serum rash, had developed, accompanied by a temperature of 101 F. The following day the temperature was down to normal, and the rash cleared up without further disturbance.

CONCLUSIONS

1. Timely blood transfusion for hemorrhage is a specific cure.
2. For hemorrhage and shock, results are good, but not specific.
3. For pure shock early transfusion, that is, transfusion before the "gray-blue" stage is reached, is useful, and is the most efficient treatment. Transfusion in the gray-blue stage is of little use. In this class, no other treatment has been useful.

FURTHER EXPERIENCE WITH FACE MASKS *

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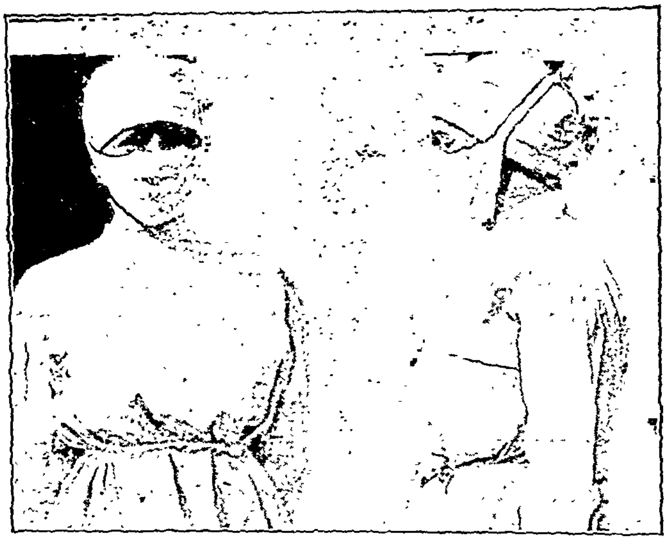
When the Durand Hospital of the John McCormick Institute for Infectious Diseases was opened, rigid aseptic technic was adopted and the nurses were specially instructed in measures calculated to protect them from infections. From March 12, 1913, to Nov. 1, 1914, nine out of sixty-nine nurses, or 13 per cent., acquired clinical diphtheria. From this time on, all nurses giving a positive Schick test were immunized with diphtheria antitoxin. This practically eliminated active diphtheria; but from Nov. 1, 1914, to June 1, 1916, weekly throat cultures disclosed ten diphtheria bacillus carriers among forty-three nurses, or 23.25 per cent.

Up to June 1, 1916, nine cases of scarlet fever occurred among 112 nurses who were on duty, or in 8 per cent.

As we were unable to explain so many instances of infection through faulty technic, an effort was made to eliminate a possible factor of danger that had previously been largely ignored, namely, infection through mouth spray. Since June 1, 1916, gauze masks have been used by the nurses, and up to Oct. 1, 1918, six diphtheria bacillus carriers have been detected among seventy-three nurses, or 5.2 per cent.[1] No case of scarlet fever has occurred since masks were worn. The nurses are instructed to change the mask as soon as it has been known to be grossly contaminated, and never to put the hands to the mask to adjust it, etc., until the hands have been thoroughly washed.

Early in 1918, bacteriologic tests showed that the masks we were using did not remove all the bacteria thrown out in mouth spray. The masks consisted of two layers of gauze, 28 by 24 mesh; but as they were worn only once before washing and resterilizing, shrinkage soon made the openings in the gauze much closer than they were in the new masks.

Studies were instituted to learn how the masks could be made most efficient. The results that we have obtained agree very well with those recently reported by Haller and Colwell[2] and Doust and Lyon.[3] They are here presented as serving further to emphasize the importance of gauze masks of proper composition. When the probable importance of droplet infection in the dissemination of human tuberculosis attracted attention, gauze masks to be worn by the patient were advocated. Hamilton, in 1905, advised the use of gauze masks to cover the mouth of patients with scarlet fever when there were severe streptococcal complications and when the individual could not be properly isolated. In 1916, Meltzer advocated the use of a fine mesh net over the faces of patients with infantile paralysis and also over the faces of attendants. Various mechanical protections of the face were formerly used by physicians when swabbing throats and doing tracheotomy in cases of diphtheria. Gauze masks have been long used by many surgeons and their assistants with the purpose of protecting wounds from infection by mouth droplets.



Durand hospital mask, devised by Miss Charlotte Johnson, superintendent: The gauze (44 by 40 mesh) is cut 8 inches wide and 23 inches long. The sides and one end are turned down one-quarter inch. It is folded twice, the unturned end first, making a 7½-inch square. The opposite diagonal corners are cut off 1 inch and the raw edge is turned in one-half inch. It is stitched firmly all around. A 1-inch dart 1½ inches long is taken up at the middle of each side of the mask. A 14-inch tape is sewed on the opposite uncut corners. This mask has the advantage of covering the nose and mouth and in making the traction on the chin and not drawing on the nose and lips.

Our experiments were performed in a quiet room with no currents of air. It was assumed that the power of various gauzes to filter moist spray from air would increase with closeness of mesh and with the number of layers employed. In the first tests a spray of carbolfuchsin was employed, the dye being susceptible of fairly accurate measurements. It was thrown as spray by a hand atomizer. Briefly, these tests showed that the percentage of fuchsin passing through the gauze becomes progressively less as the mesh of the gauze becomes closer and as the numbers of layers of gauze is multiplied.

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* From the John McCormick Institute for Infectious Diseases.

[1] Our experiences up to Dec. 1, 1917, were reported by Weaver, G. H.: The Value of the Face Mask and Other Measures in Prevention of Diphtheria, Meningitis, Pneumonia, etc., The Journal A. M. A., Jan. 12, 1918, p. 76.

[2] Haller, D. A., and Colwell, R. C.: The Protective Qualities of the Gauze Face Mask, The Journal A. M. A., Oct. 12, 1918, p. 1213.

[3] Doust, B. C., and Lyon, A. B.: Face Masks in Infections of the Respiratory Tract, The Journal A. M. A., Oct. 12, 1918, p. 1216.

Similar tests were made by throwing a spray of a suspension of *Bacillus prodigiosus* in salt solution against gauze and estimating the number of colonies developing on plates exposed on the opposite side. It was found that the number of colonies became progressively less as the mesh of the gauze became finer and as the number of layers of gauze increased. It was noted that at a distance of from 3 to 5 feet from the spray, the proportion of the bacteria reaching that point which passed through the gauze barriers was greater than at shorter or greater distances. This is probably to be explained by the more rapid precipitation of the larger particles as regards the nearer distances and by the failing force at greater distances. These results demonstrated that gauze will remove bacteria from air when carried in a moist spray. The efficiency of the gauze as a filter is in direct ratio to the fineness of mesh and the number of layers used.

Further tests were now made to determine the efficiency of gauzes of various meshes and in different numbers of layers as filters for mouth spray. A suitable subject for these tests was found in an adult who was affected by a chronic antrum and ethmoid suppuration with constant purulent discharge, in whose throat and mouth *Streptococcus viridans* in abundance was constantly present. It was found that a mouth spray very rich in bacteria was discharged by this patient when the cheeks were distended with air and then, the lips being suddenly opened a little, the air was forced out with an explosive puff. The spray produced in this way was more abundant than that following coughing, and the driving force was greater, thus furnishing a very severe test as to the filtering power of obstructing gauze. Tests were made by having the patient direct such forcible expiratory efforts toward vertically placed Petri dishes containing blood agar at a distance of 6 inches, the face being uncovered and covered by various gauzes in different multiples. The results shown in Table 1 were obtained on a day when the streptococci were especially abundant. The colonies developing on the plates after twenty-four hours in the incubator were practically all of *Streptococcus viridans*. It will be noted that the coarser gauze allowed a large proportion of the bacteria to pass through, even when six layers were interposed. On the contrary, the finer gauzes removed many more of the bacteria, and when six and eight layers were used, almost all the bacteria were held back.

TABLE 1.—NUMBER OF COLONIES OF STREPTOCOCCUS VIRIDANS DEVELOPING ON BLOOD-AGAR PLATES EXPOSED AT 6 INCHES TO TWO EXPLOSIVE EXPIRATORY EFFORTS IN WHICH THE CHEEKS WERE FIRST DISTENDED WITH AIR AND THEN THE LIPS FORCED SLIGHTLY APART WITH A PUFF

Number of Layers of Gauze	Mesh of Gauze									
	20 by 14		24 by 20		28 by 24		32 by 28		44 by 40	
	No.	%	No.	%	No.	%	No.	%	No.	%
0	2,000	...	2,000	...	2,000	..	2,000	..	2,000	..
1	2,000	100	2,000	100	1,500	75	1,500	75	1,500	75
2	1,500	75	1,500	75	1,500	75	800	40	800	40
4	800	40	800	40	1,000	50	500	25	80	4
6	500	25	200	10	50	2.5	5	0.25	0	0.0
8	100	5	15	0.75	0	0.0	1	0.05	0	0.0

Similar results were secured when a culture of *B. prodigiosus* had been smeared on the pharynx and tongue shortly before the test; in this case only the colonies of *B. prodigiosus* were counted.

TABLE 2.—NUMBER OF COLONIES OF STREPTOCOCCUS VIRIDANS DEVELOPING ON BLOOD-AGAR PLATES WHEN EXPOSED TO TWO EXPLOSIVE COUGHS WITH LIPS SLIGHTLY PARTED

Distance from Mouth to Plate	No. Gauze	Three Layers of Gauze (44 by 40)		Colonies	Per Cent. Passing Through	Per Cent. Excluded
		Over Face	Over Plate			
6 inches.......	+	....	....	150	....	....
6 inches.......	....	+	....	20	13.3	86.7
6 inches.......	....	....	+	16	10.6	89.4
1 foot.........	+	....	....	150	....	....
1 foot.........	....	+	....	8	5.3	94.7
1 foot.........	....	....	+	12	8.0	92.0
2 feet.........	+	....	....	2	....	....
2 feet.........	....	+	....	1	50.0	50.0
2 feet.........	....	....	+	1	50.0	50.0
3 feet.........	+	....	....	1	....	....
3 feet.........	....	+	....	0	0.0	100.0
3 feet.........	....	....	+	0	0.0	100.0

There appeared to be no appreciable difference between dry and moist gauze in filtering properties. Since three or four layers of gauze with a mesh of 44 by 40 removed most of the bacterial spray thrown with unusual force at a short distance, further tests were carried out to learn how efficient as filters of mouth spray three layers of this gauze would be when placed over the mouth of the person discharging the spray and over the exposed plate at varying distances, corresponding to the face of the person in the neighborhood. The plates were placed vertically as in the preceding experiment. The expiratory effort consisted of two strong coughs with the lips slightly parted.

Tables 2 and 3 show the results of two such experiments, similar ones with slight variation being secured many times. The same person served in these tests as those reported above. When the gauze mask was over the face, very few colonies developed in the plates. When the gauze was over the plates, the proportion of colonies as compared to unobstructed plates was also small, but slightly larger because here the

TABLE 3.—NUMBER OF COLONIES OF BACILLUS PRODIGIOSUS DEVELOPING ON AGAR PLATES WHEN EXPOSED TO TWO EXPLOSIVE COUGHS WITH LIPS SLIGHTLY PARTED, THE PHARYNX AND TONGUE BEING PREVIOUSLY SMEARED WITH A CULTURE OF BACILLUS PRODIGIOSUS

Distance from Mouth to Plate	No. Gauze	Three Layers of Gauze (44 by 40)		Colonies	Per Cent. Passing Through	Per Cent. Excluded
		Over Face	Over Plate			
6 inches.......	+	....	....	35	....	....
6 inches.......	....	+	....	0	0.0	100.0
6 inches.......	....	....	+	1	2.9	97.1
1 foot.........	+	....	....	32	....	....
1 foot.........	....	+	....	1	3.1	96.9
1 foot.........	....	....	+	1	3.1	96.9
2 feet.........	+	....	....	9	....	....
2 feet.........	....	+	....	2	22.2	77.8
2 feet.........	....	....	+	1	11.1	88.9
3 feet.........	+	....	....	2	....	....
3 feet.........	....	+	....	1	50.0	50.0
3 feet.........	....	....	+	1	50.0	50.0

finer particles are dealt with. At a distance of 2 or 3 feet, relatively more of the particles reaching that distance pass through because here only very fine particles are projected. In the cases in which *B. prodigiosus* was smeared over the pharynx and tongue, fewer colonies developed in plates placed behind gauze obstruction. This is probably because the bacteria were less thoroughly distributed in the saliva. If the colonies that develop on unobstructed plates placed near the month are examined under magnification, it is noticed that many are compound colonies; and many of those that develop from the larger particles of saliva are the result of the growth of clumps of bacteria. Thus the number of bacteria removed is greater than the number of colonies would indicate. These larger particles of saliva are probably more dangerous, not only because they contain more bacteria but also because the toxic substances contained in the projected mucus may act on the mucous membrane where they lodge so as to favor the growth and penetration of the associated bacteria. Since the completion of these studies, the masks used in Durand Hospital have been made of three layers of gauze with a mesh of 44 by 40. The nurses are instructed to wear two superimposed masks, making six layers of gauze, when caring for cases of virulent infections in which secretions are abundant. The gauze that we have used is absorbent. It is probably preferable to buttercloth, which is treated to make the material nonabsorbent. Particles of mucus will adhere more quickly and firmly to the absorbent material, as the rapid removal of the water leaves a thicker and more sticky residue. So far we have been able to secure but one weave of buttercloth, about 28 by 30, and this is not as fine a mesh as is desirable. Even this is very difficult to find, most large dealers having none in stock and usually not knowing where it can be secured. In any case the dressing is removed in washing. Our experience with masks has been principally confined to their use to protect attendants on the sick from infection. They have been used not only by nurses, but also by physicians in their work while taking cultures from throats, doing intubations and examining chests. The mask on the face interferes with putting the hands to the mouth and nose, and so indirectly becomes a source of safety to the individual, whose hands are apt to be contaminated in her work and who thoughtlessly may put them to the face. We have also used masks over the faces of mothers while nursing their babies, when either one has been infected by diphtheria or has been a diphtheria carrier.

The employment of gauze masks over the face to prevent the transfer of infections to others was thoroughly worked out and practically applied by Capps[4] at Camp Grant. He used masks to prevent cross-infections in ambulances and in the admission rooms and wards of the hospital. Similar use of masks has since been generally adopted in Army and Navy camps and in many civil hospitals. The intelligent use of gauze masks and other measures may be instituted equally well in private families. Many family epidemics might be limited by such means. In all instances in which infections locate in the respiratory tract and in which the infectious agent is discharged in mouth spray, it is reasonable to protect those about the patient by masks of gauze.

The present concentration of effort to limit droplet infection should not prevent an equally energetic effort to close other channels of spread of infectious materials. The use of face masks may serve to give an unwarranted feeling of security to those employing them if they neglect the measures that prevent carriage of infectious materials through other agents. Emphasis must still be placed on proper sterilization of eating utensils, destruction of all infectious discharges, avoiding all contamination of foods, and special care regarding the washing of the hands every time the sick are handled.

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[4] Capps, J. A.: Measures for the Prevention and Control of Respiratory Infections in Military Camps, THE JOURNAL A. M. A., Aug. 10, 1918, p. 448.

New and Nonofficial Remedies

THE FOLLOWING ADDITIONAL ARTICLES HAVE BEEN ACCEPTED AS CONFORMING TO THE RULES OF THE COUNCIL ON PHARMACY AND CHEMISTRY OF THE AMERICAN MEDICAL ASSOCIATION FOR ADMISSION TO NEW AND NONOFFICIAL REMEDIES. A COPY OF THE RULES ON WHICH THE COUNCIL BASES ITS ACTION WILL BE SENT ON APPLICATION. W. A. PUCKNER, SECRETARY.

PNEUMOCOCCUS VACCINE (See N. N. R., 1918, p. 337-8).

A vaccine or "antigen" is prepared by E. C. Rosenow (THE JOURNAL, March 16, 1918, p. 759) by digesting a suspension of pneumococci at 37 C. until about 95 per cent. of the organisms have become gram-negative and the mixture is relatively nontoxic to guinea-pigs.

Actions and Uses.—(See N. N. R., 1918, p. 337-8.)

E. C. Rosenow believes that the protective power against pneumococcus infection is greater with a vaccine prepared according to his method than that of a vaccine made according to the usual method.

Eli Lilly & Co., Indianapolis.

Pneumococcus Antigen (Rosenow), Lilly.—Marketed in 5 Cc. vials, each Cc. containing 20 million partially autolyzed pneumococci.

Bacterial Examination of Green Vegetables.—Kurk (*Am. Jour. Pub. Health,* September, 1918) undertook an investigation to determine the presence of the coli-typhoid group of organisms, streptococci and anaerobic organisms on green vegetables. Samples were purchased at various stores about Chicago, one sample of watercress being obtained from a glass bowl containing water from a free lunch counter in a saloon. The culture mediums were made according to the standard methods of water examination of the American Public Health Association. Five organisms superficially resembling paratyphoid bacilli were isolated, but in no case did complete cultural and agglutination reactions determine that they belonged to this group. *B. coli* were found in twenty-two out of twenty-nine samples. Of samples from twelve stores classed as clean, eleven showed *B. coli;* of ten samples from stores classed as fair, six showed *B. coli,* and of six from dirty stores five contained *B. coli.* Streptococci were found on three samples—two from clean stores and one from a store classed as fair. *B. cloacae* were found on five samples, three from dirty stores and two from fair stores. A sample of green onions contained a great number of *B. cloacae,* as did a later sample of onions obtained from the same store. Mold spores were found on thirteen of twenty-nine samples; twenty-eight out of twenty-nine samples contained gas formers on lactose broth. The total bacterial count at 37 C. and 20 C. varied widely, the former from 6,000 to 4,300,000, and at the latter temperature from 18,000 to 25,800,000, the latter count being obtained from the sample of watercress from the saloon free lunch. Other than this the sanitary condition of the store did not seem materially to influence the bacterial count.

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SATURDAY, OCTOBER 26, 1918

SERUMS AND VACCINES IN INFLUENZA

With respect to serums and vaccines in influenza, there are certain simple facts and considerations that physicians will do well to keep in mind at this time. The main point to keep always in sight is that unfortunately we as yet have no specific serum or other specific means for the cure of influenza, and *no* specific vaccine or vaccines for its prevention. Such is the fact, all claims and propagandist statements in the newspapers and elsewhere to the contrary notwithstanding. This being the case, efforts at treatment and prevention by serums and vaccines, now hurriedly undertaken, are simply experiments in a new field, and the true value of the results cannot be predicted by any one. Indeed, the exact results can be determined if at all only after a time, in most cases probably not until the epidemic is past and all the returns fully canvassed. Consequently the physician must keep his head level and not allow himself to be led into making more promises than the facts warrant. This warning applies especially to health officers in their public relations.

As to serum treatment, the only noteworthy new method so far is the injection in severe cases of influenzal pneumonia of the serum of patients who have recovered from such pneumonia.[1] The principle of this method is rational; analogous procedures have given seemingly good results in scarlet fever and other diseases; and the results reported in influenzal pneumonia appear promising. Further trial of this treatment under proper conditions consequently seems to be warranted. It should be borne in mind, however, that McGuire and Redden[1] made their observations in the declining phase of the epidemic when the organism or organisms concerned appeared to be losing virulence. For this and other reasons the expectations as to what may be accomplished by this method must be kept within reasonable bounds. Influenza is a self-limited disease with variable complications and of variable severity in different places, thus offering great difficulties in the way of evaluation of different methods of treatment.

At least two kinds of vaccine are in use in the hope that they may have preventive effects. One consists solely of killed influenza bacilli, and it is being extensively used in the East. We have as yet no decisive figures as to its effects, but there is an impression that it may have some value. The other vaccine is a mixed vaccine of the more important bacteria in the respiratory tract in influenza, principally pneumococci, streptococci and influenza bacilli. It appears that vaccines of this nature are in extensive use, but we have no evidence that any benefit will be derived from them. To say that thousands have been vaccinated with apparently good results means nothing at all simply because we are still in the midst of the outbreak, in many places even in the earlier stages. How slender the basis for this anti-influenzal vaccination when it is considered that the real nature of influenza is still unknown! In any event, it will require many carefully elaborated and controlled observations before anything definite may be learned in regard to the effect of these vaccines, and it is probably safe to say that nothing on which to rely in the future can be learned from the indiscriminate vaccination now going on. There is, therefore, no basis on which promise of protection from vaccines may be made. They may be harmless, and they may or may not be of preventive value.

MEDICAL ASPECTS OF AVIATION

The subject of rotation tests employed in examining aviators for their sense of balance has recently been debated[1] in The Journal by the critics and the supporters. Whether or not these tests are too strict, it is at least clear that the flying men should have not only good general health, but also keen vision, quick reactions, coolness, and normal or more than normal capacity for maintaining their equilibrium.

In this issue appears a series of papers[2] showing the work that is being done to protect aviators against the effects of altitude, low barometric pressure, and deficiency of oxygen. This is a matter that has steadily increased in importance from both the medical and the military standpoints. The rapid improvements in aeroplanes under the stimulus of military needs have made it possible to carry aerial fighting to greater and greater altitudes. Speed and its equivalent, the ability to climb above the opponent, is to air fighting very much what the windward position, or weather gage, was in naval warfare in the days of sailing ships. Accordingly, even the bombing and observation planes are now able to fly for hours at altitudes of 12,000 and 15,000 feet, as they must do in crossing the enemy line; while the pursuit or battle planes fly at the enormous altitudes of 18,000 and 20,000 feet and even more. Everything depends on these hawks of the battle field, and it is they that protect their own observation planes, or in a swift swoop drop down on and destroy the observation planes of the enemy.

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[1] McGuire, L. W., and Redden, W. R.: Treatment of Influenza Pneumonia by the *Use* of Convalescent Human Serum: Preliminary Report, The Journal A. M. A., Oct. 19, 1918, p. 1311.

[1] Small, C. P.: Equilibrium Tests for Aviation *Recruits*, The Journal A. M. A., Sept. 29, 1917, p. 1078. Jones, I. H.: *The Ear and* Aviation, Nov. 10, 1917, p. 1607. Fridenberg, Percy: Visual Factors in Equilibration, Especially Aviation, *April 6, 1918, p.* 991. Parsons, R. P., and Segar, L. H.: Bárány Chair Tests and Flying Ability, April 13, 1918, p. 1064. *The Bárány Tests* in the Examination of *Aviators*, editorial, April 13, 1918, p. 1096. The Physical Qualities of Aviators, April 27, 1918, p. 1229. Bárány Chair *Tests and Flyin* Ability, Correspondence, May 25, 1918, p. 1559; June 15, *1918, p.* 18

[2] Medical Studies in Aviation, pp. 1382-1400.

With the increase in the altitudes at which flying is common, there has been a corresponding increase in the development of so-called air staleness among pilots. It is particularly the most experienced aviators who succumb to this disorder and become unable to fly longer at the necessary altitude. This is, of course, a matter of the utmost military importance, as it deprives the service of its best aviators. Air staleness is a condition in some respects like the irritable heart of the overstrained soldier, or like overtraining in the athlete. To what extent such conditions are functional or neurotic or dependent on some abnormality of chemical balance is a problem that is now under active investigation both in America and in England in military hospitals for cardiac patients. Individual predisposition toward air staleness is subject to wide variations, and it is a matter of great importance, therefore, both for the avoidance of loss of life among the men in training for our air service, and for the development of the highest military efficiency among those selected, that the capacity of every candidate to withstand the effects of altitude and deficiency of oxygen should be determined.

The investigators at the Medical Research Laboratory at Mineola have found not only the theoretical but also a highly practical solution for this problem. By means of the rebreathing apparatus introduced by Henderson for this purpose, the subject breathes a closed volume of air and thus consumes the oxygen. The exhaled carbon dioxid is absorbed by alkali. By the reduction in the amount of oxygen, the subject is exposed to progressively lower tensions of oxygen, and thus to the physiologic equivalents of greater and greater altitudes until the limit of his endurance is reached.

During the low oxygen test, continuous observations are made on the arterial pressure, pulse and breathing, on the sounds and size of the heart, on alterations of vision, particularly stereoscopic and peripheral, and on the development of mental instability and muscular incoordination. The peculiar response of the cutaneous blood vessels known as the tache cérébrale (a concomitant of various nervous and cerebral diseases) likewise occurs in a considerable proportion of the men undergoing the test, and tends to indicate unsuitability.

The results obtained show that a considerable percentage of the men who pass even the exacting medical examination required by the Aviation Service are unable to withstand altitudes even as low as 10,000 feet without exhibiting such physical or mental depreciation as would seriously endanger a man piloting a plane. On the other hand, these tests reveal a small percentage of men who are naturally so resistant to low oxygen that they can withstand the equivalent of 20,000 feet or more for a half hour or longer without serious depreciation, either mental or physical. Evidently such men are specially fitted for work at high altitudes.

Nor is the usefulness of these tests ended by the enlistment and grading of the pilot. The Medical Corps is assigning to each aviation unit one or more flight surgeons, assisted by physical directors selected from among the men who were formerly trainers of college athletic teams. It is their duty to keep the aviators in as perfect physical condition as if they were so many football players. The flight surgeons are all given a special course of training at the Medical Research Laboratory of the Air Service in the physiology, or as it has now become, the medicine of altitude.

Previous investigations, such as those of the Pike's Peak Expedition,[3] have demonstrated that the acclimatization of persons living at various altitudes involves certain functional readjustments, especially an increased number of red corpuscles, a decreased alkali reserve in the blood, and a larger volume of breathing, that is, a lowered alveolar carbon dioxid. These readjustments, however, require days or even weeks to develop, and the study of the condition of aviators has demonstrated that unfortunately the brief periods during which they are exposed to low oxygen result in no appreciable degree of acclimatization. On the contrary, repeated flights at altitudes above those which the individual's unacclimatized (i. e., sea level) functional capacity can easily compensate act like repeated nervous and cardiac overstrains. If too often repeated, air staleness results, and the pilot is either incapacitated to fly at all or, if he persists, he is liable to lose consciousness in the air and fall.

The rebreathing test finds its use, therefore, as a means of diagnosis, for it now becomes possible, whenever the flight surgeon suspects that air staleness is developing in one of the men in his charge, to determine accurately the degree of overtraining. Furthermore, it appears[4] that the use of this low oxygen test may have a broader application in internal medicine as a measure of the functional power of the heart and circulation.

The application of physiologic knowledge to this problem appears likely to prove one of the most valuable contributions to the efficiency of the American Air Service.

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[3] Douglas, C. G.; Haldane, J. S.; Henderson, Y., and Schneider, E. C.: Physiological Observations made on Pike's Peak, Colo., with Special Reference to Adaptation to Low Barometric Pressures, Phil. Tr. Roy. Soc., London, 1913, B, 203, p. 185.

[4] Whitney, J. L.: Medical Studies in Aviation, III. Cardiovascular Observations, THE JOURNAL A. M. A., this issue, p. 1389.

THE CONGENIAL CALORIES OF THE CANDY SHOP

At a time when conservation of foodstuffs, and especially of sugar, is one of the vital necessities of our country and the fundamental duty of every one of us, the soda-guzzling youngsters and the candy-nibbling matinée followers are properly looked on with suspicion. There is no doubt that before the war our consumption of soda water, ice cream and confectionery was growing at a rapid rate, and there is every reason to believe that when the restrictions are removed and the prices abate, these typically American habits will continue as before, or increase. Just how large an amount of nutriment is taken in this way by many people is probably not generally appreciated, and formerly we had no definite information on which to base an estimate. This has now been furnished in a reliable and exact form from the Nutrition Laboratory of the Carnegie Institution.[1] By aid of the method of direct determination of the heat of combustion in the calorimetric bomb, the total calories furnished by numerous popular sweets and beverages have been ascertained. These analyses reveal that an ordinary six-cent (war price) bar of sweet chocolate will furnish ordinarily 200 or 300 calories. Taking most of these chocolate candies sold in bar form, whether sweet, milk or nut chocolate, ten cents will purchase as high as 735 calories in some brands, ordinarily from 300 to 600 calories, and in only a few cases less than 200 calories. As 500 calories is nearly one third of the basal caloric requirement of normal man, and may represent from one fifth to one sixth of the total daily requirements of the average man not at severe muscular labor, a bar of chocolate candy, or its equivalent from the bonbon box, means a very considerable addition to the food supply which is usually a between-meals addition that does not materially curtail the food eaten at each meal. No wonder there are so many fat women at the matinée.

America's most prominent inventions in the line of beverages are undoubtedly the cocktail and the ice cream soda. What amount of fire the former provides, the Benedicts do not state; probably the calorimetric bomb could not do it justice anyway, for a calorimetric bomb is a soulless thing, without a particle of poetry or imagination. But a cold and clammy ice cream soda apparently digests readily in the alimentary apparatus of the bomb, and registers from 202 to 467 calories, depending on the liberality of the soda clerk. There seems to be some honesty in the soda trade, for the fifteen centers give more calories than the ten centers. The "sundaes" or "college ices" furnish a large fraction of a full meal, yielding generally from 300 to 500 calories. When you order a nut sundae you get from 4 to 6 gm. of protein to help balance the ration. And the children's favorite, the ice cream cone, comes through with about 100 calories for a nickel. So it isn't surprising or undesirable if Willie doesn't eat all of his dinner when he has had two ice cream cones, a bar of chocolate almonds and an ice cream soda. He has had about a thousand calories in the mess, which is about one third as many calories as father needs for a day's work.

Even the simpler beverages furnish numerous calories. Ginger ale gives about 150 calories to the pint, and grape juice about twice as much. The plain vanilla or chocolate soda without cream averages about 200 calories. Ordinary "crackers" furnish about 4.5 to 5 calories per gram, which means that the usual soda cracker gives about 30 calories, or about one-tenth to one-fifteenth as much as ten cents' worth of chocolate candy, although it does provide much more protein. So the afternoon tea, with candies and fancy crackers, furnishes not a few calories, usually to people who do not seem to need them very much. At a boys' school it was found that the between-meals candies, sodas, etc., amounted to about 640 calories, which is a mere trifle in the nutrition of the adolescent male. We are tantalized by the statement that at Vassar these extras totaled 10 per cent. of the daily intake—we long for the details. Physicians will see in these figures reason for careful inquiry into the sweet-tooth requirements of his patients, as well as the meal-time consumption of foods—especially in the fat ones.

PEANUTS AND SOY BEANS AS HUMAN FOODS

The evolution of food products from animal sources—the production of meat, milk, eggs, pork, bacon, poultry, etc.—involves the conversion of plant products, many of which may serve directly as human nutriment. This transformation of cereals, for example, into meat and milk, is an expensive one from the standpoint of the energy exchange that is necessitated. To build up one pound of food in the form of animal tissues calls for the feeding of many pounds of nutrients from plant sources. It has therefore become a serious problem in the face of a possible shortage to determine to what extent it is permissible, not to say profitable, to convert edible cereals into animal products prior to using them rather than to consume the corn, barley, wheat, etc., directly in the human ration. Milk must be had at all events; but it seems probable that both Americans and Europeans will tend more and more in the next few years to displace meat and related animal food materials to a considerable degree with vegetable foods. The trend toward a more extensively vegetarian regimen is almost certain to follow as a consequence of the altered conditions of animal husbandry enforced by the high cost of feeds.

The prospect thus presented brings the cereals into prominence at once. Among a large group of the population in France, bread constitutes more than half of the energy intake per day. The cereals are essentially alike in being comparatively low in their content of protein as contrasted with animal foods. Any plan to supplant the latter to any extent in the dietary therefore calls for the introduction of products from vegetable sources that can be classed as protein-rich. These must be available to supplement in some degree the already indispensable cereals, just as meats and other animal foods do at present.

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[1] Benedict, Cornelia G., and Benedict, F. G.: The Energy Content of Extra Foods, Boston Med. and Surg. Jour., 1918, 179, 153.

The protein problem is not, however, merely a quantitative one. There is considerable justification for the belief that the proteins supplied by meat, eggs and milk are of high biologic value. In replacing them as the status of the pocketbook and the economics of agriculture seem to demand, attention must be centered on the possibility of securing proteins that represent a suitable amino-acid make-up, the nutritive significance of which has repeatedly been pointed out in The Journal. The legumes, particularly the ordinary garden peas and beans, come foremost into mind as protein-rich vegetable food materials. But there is no lack of evidence to show that while the proteins of the more widely used legumes are quite well utilized by the human body, comparing very favorably in this respect with the cereal proteins, they are not as completely utilized as the proteins supplied by such animal foods as meats, eggs and milk.

Two leguminous seeds have lately made better claims for more popular recognition in human nutrition. The soy bean has been a staple for generations among the people of China and Japan. It forms a prominent source of protein in their diet, supplementing rice, which is so extensively used and contains a great excess of carbohydrates. These people keep few live stock and eat little meat. Apparently they believe it is the part of economy to eat vegetables rather than to feed them to animals and then eat the animals. In this country a beginning in the use of soy beans in the human dietary has scarcely yet been made. The second legume, the peanut, is popularly known, though its prominence dates back to scarcely more than half a century. It is eaten in a casual way, rather than as a staple in the diet; and it would not be difficult to gather "impressions" as to the poor digestibility of the peanut.

We have already presented some reasons for believing that both the soy bean and the peanut may represent unusually desirable sources of protein. In reporting the feeding experiments of Osborne and Mendel[1] and Daniels and collaborators,[2] the favorable prospect offered by an increased use of both products was intimated. Further studies conducted by Johns and his co-workers at the Bureau of Chemistry in Washington show that from both soy beans and peanuts it is possible to isolate a liberal quantity of proteins relatively rich in their yield of the amino-acids lysin and tryptophan—a partial index of presumable nutritive superiority.

An added test of dietary value—that of digestibility—has been furnished anew by the Office of Home Economics in the United States Department of Agriculture. Holmes[3] has conducted this investigation on men in whose diet soy bean and peanut flours contributed a liberal proportion of the entire protein intake. They were eaten in the form of a well-known type of "quick bread" or "biscuit" as a part of a simple mixed diet. None of the subjects reported any digestive or other physiologic disturbances. Holmes is justified in believing that the figures, 85 per cent. for the digestibility of soy bean protein and 86 per cent. for the digestibility of peanut protein, indicate a very satisfactory utilization of these proteins by the human body. No attempt was made to ascertain the limit of tolerance for soy bean and peanut flours when included in a simple mixed diet; but since in seven experiments with soy beans the subjects ate an average of 70 gm. daily of soy bean protein, and in four experiments with peanut flour the subjects ate an average of 65 gm. of peanut protein daily without any observed symptoms of physiologic disturbance, it should be evident that these proteins are tolerated by the human body in amounts in excess of those that are likely to be found in the ordinary mixed diet. At any rate, the figures obtained for the digestibility of the proteins supplied by soy bean and peanut press-cake flours compare favorably with those obtained for cereal proteins, and are somewhat higher than those obtained for some other legume proteins. Perhaps, therefore, we shall not go amiss for the present in classing dietary articles suitably prepared from either the soy bean or the peanut as substitutes for both wheat and meat. The success of such substitution, however, becomes a problem of the culinary art rather than of physiology.

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[1] Osborne, T. B., and Mendel, L. B.: The Use of Soy Bean as Food, Jour. Biol. Chem., 1917, **32**, 369.

[2] Daniels, Amy L., and Nichols, Nell B.: The Nutritive Value of the Soy Bean, Jour. Biol. Chem., 1917, **32**, 91. Daniels, Amy L., and Loughlin, Rosemary: Feeding Experiments with Peanuts, ibid., 1918, **33**, 295. The Soy Bean, Its Enzymes and Carbohydrates, editorial, The Journal A. M. A., Oct. 16, 1915, p. 1372; Peanuts as Food, March 23, 1918, p. 850.

[3] Holmes, A. D.: Digestibility of Protein Supplied by Soy Bean and Peanut Press-Cake Flours, Bull. 717, U. S. Dept. Agric., 1918.

Points on Treatment of Bone and Joint Injuries at the Front.—Early splinting; early definitive surgery; early closure; early function through voluntary movements; early appreciation of the best functional position for stiffened joints: shoulder should be fixed in 70 degrees of abduction; elbow at a right angle or even a little less; wrist dorsally flexed; hip abducted 5 degrees, outwardly rotated 10 degrees, flexed 20 degrees; knee, for standing occupation, flexed 20 degrees; for sitting, 30 degrees; ankle with the foot at right angles with the lower leg. Joints in these positions, though completely ankylosed, can be counted on to preserve much useful function for the limb. Immobilization in these favorable positions should be insisted on in the presence of any process or lesion which threatens ankylosis.—*Review of War Surgery and Medicine.*

Current Comment

THE PROBLEM OF ESSENTIAL TEACHERS IN MEDICAL SCHOOLS

Since the entrance of the United States into the world war, several problems have arisen, the solution of which was necessary in order that the medical schools might be kept going and the regular supply of physicians maintained. First came the necessity of keeping medical students at their studies, which was met by establishing the medical enlisted reserve corps. Next came the question of the premedical students, for whom, as noted last week,[1] provision is now made in connection with the Students' Army Training Corps. A third and more serious problem, however, was how to hold at their teaching duties an adequate number of teachers. When the appeal for medical officers was made, many teachers patriotically responded who might better have remained at their college work. In some medical schools the proportion of teachers who entered the government medical services was so great as to endanger the very existence of the institution. This problem has been met by establishing in the Office of the Surgeon-General a list of essential teachers based on lists furnished by the deans of the well-recognized medical colleges. The policy of the Surgeon-General is not to issue commissions to a physician who is on the essential list unless notified by the dean that he has been released. There has been much discussion regarding some form of government recognition of those on the essential list, but no satisfactory method has been found. However, the fact that a physician is listed by the War Department as an essential teacher is a recognition of his teaching ability. Furthermore, the reservation of a physician as an essential teacher is equivalent to assignment to military duty. This is especially so now that medical schools are largely under government control and since the teachers are training students who, as members of the Students' Army Training Corps, are soldiers on active duty in the United States Army. Meanwhile, with this understanding it is believed that essential teachers will be willing to remain loyally at their teaching duties to which they have been assigned. If the student soldiers are to become well-trained medical officers, it is necessary that efficient methods of teaching in the medical school shall be maintained.

THE IMPOSSIBILITIES OF STRAW BREAD AS FOOD

As the indigestible parts of plants are to a large degree composed of complex carbohydrates, the best known of this group being cellulose, it has often been proposed to attempt to convert them into simpler carbohydrate compounds, like the sugars, which are more readily assimilated by the organism. Cattle and other food-producing animals can apparently utilize the "crude fiber" of plants to some extent, possibly through the intervention of the microbiotic agencies in the large gastro-enteric tract of the herbivora; but it would unquestionably be a nutritive gain if a more available product could be prepared from the resistant food residues. As cellulose, pentosans, etc., they serve primarily as "roughage" in the diet; once transformed into absorbable products, they might function just as starch and sugars do. The chemical possibilities here concerned have appealed to conservation enthusiasts in war time to the extent of suggesting the inclusion of chemically treated fibrous products like straw even into the ration of men. Fortunately we are in a position to profit in dietetics as well as in warfare by the mistakes of our enemies. It is reported on the authority of Professor Rubner,[1] the Berlin physiologist, that efforts were made in Germany during the hard winter of 1916-1917 to introduce the chemically treated straw, which experiment had shown to be well utilized by horses and cattle, as a diluent into the bread of the population. Rubner's investigations burst the bubble of possibility in this direction. Whatever may be the value of chemically treated straw in the alimentary tracts of herbivora, it is of inferior use in those species, such as the pig and the dog, with a less complexly constituted digestive canal. The further obviously probable indication of the unsuitability of the treated straw for the purposes of human nutrition has also been verified by Rubner. In the case of the dog, at least three quarters of the straw product remained unabsorbed. In the experiments on man, the addition of such straw to bread led to an increased waste, which was actually greater, in calories, than the energy value of the straw ingested. The straw bread was inferior in every way. Its palatability and texture were bad; it tended to develop distress in the bowel. These were the observations on healthy persons. What the less vigorous might have experienced can only be conjectured. Straw bread was "made in Germany," and we want none of it in America.

VOLUNTEERS FOR U. S. PUBLIC HEALTH WORK

The present epidemic of influenza has made it necessary for the United States Public Health Service to make an urgent call on physicians for help in localities in which the epidemic is unusually severe. A notice of this appeal appeared in The Journal two weeks ago and has been accorded gratifying response. That notice, however, was for more or less permanent position with the Public Health Service. On another page[2] is an appeal to physicians for temporary service. While those who volunteer for such service will not be in uniform, and while they will have no rank, this service is just as definite a patriotic privilege as is that of serving in the Medical Corps of the Army or Navy. This is especially true at this time when the need of the civilian population for a mobile supply of physicians is so great—for physicians who can be sent from place to place as exigencies require. Physicians who are able to serve in one of the proposed temporary appointments should waste no time in responding to this appeal of the United States Public Health Service.

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[1] Information for Medical Schools and Program for Premedical Students, The Journal A. M. A., Oct. 19, 1918, p. 1319.

[1] Rubner, M.: Die Verwertung aufgeschlossenen Strohes für die Ernährung des Menschen, Arch. f. Physiol., 1917, p. 74.

[2] This issue, p. 1413.

RESPONSIBILITY FOR TYPHOID FEVER

The owners of steamers on the Great Lakes are warned by a recent decision of the federal district court that heavy money penalties may be exacted for illness caused by polluted water.[1] The damages awarded in eleven cases range from $305 to $16,045, totaling $50,462. In the case in question a lake steamer sailing from Detroit used impure water for drinking purposes after the water in the tanks aboard had been exhausted. The evidence submitted was held to prove beyond question that the typhoid cases were contracted by the drinking of this polluted water. The increasing rarity of typhoid fever in this country focuses attention on instances of this sort, so that more attention will doubtless be paid to safeguarding travelers against typhoid infection through oversight or negligence.

THE AMERICAN RED CROSS AND PUERICULTURE IN FRANCE

A goodly portion of the October issue of the *American Journal of Diseases of Children* is concerned with what M. Paul Strauss of Paris has designated as puericulture in France.[2] It bears witness to the splendid service in which the Children's Bureau of the American Red Cross is engaged. Any one who reads at all must have formed some conception of the serious situations created among mothers and children through the displacement of the population of northern France, the lack of medical attention owing to the scarcity of physicians, and the food and fuel crisis, added to the innumerable other deprivations that a country so cruelly invaded has experienced. In the city of St. Etienne, with a population of 180,000 before the war, there were 120 physicians; at present the 250,000 inhabitants depend on the medical services of fourteen physicians. Most villages have been without any since the mobilization. The Red Cross has shared in the management of the child *rapatrié;* it has devoted its best efforts to the reduction of infant mortality; it has promoted the clinics for prenatal care; it has not only given aid to prospective and present mothers and their nurslings, but also has facilitated the plans for protecting young women and promoting social hygiene. Educational work has been no small feature of the campaign. We should have difficulty in rivaling an exhibit of child welfare work such as was staged at Lyons with an attendance of more than 170,000 persons in three weeks. The story of the efforts of the American Red Cross to aid French agencies in uniting all available forces, governmental, philanthropic and medical, in a preventive educational program is inspiring. For us a more immediate lesson has been expressed by the chief of the Children's Bureau of the American Red Cross in France, Professor Lucas of the University of California. He says:

> What I have seen not only in France, but also in England and in this country since returning, has convinced me that now is the psychologic time to develop and coordinate all our child welfare work in this country. I feel that all the different associations which represent the best medical thought in child welfare should certainly get together on a definite coordinated program for this country, and back up our governmental bureaus dealing with child welfare problems. This year in America has already been proclaimed by President Wilson as the "children's year," and it will be a great lost opportunity unless some national program which coordinates all the best efforts both private and governmental is worked out and put on a very sound basis.

This is the psychologic time for many reforms.

Medical Mobilization and the War

Medical Women's Hospital Established

The American Women's Hospitals No. 1, cooperating with the American Committee for Devastated France and working with the Sixth French Army in the advanced area, is now established in a XV Century chateau near the front. Dr. Barbara Hunt, Bangor, Me., is the director of this unit.

More Units for American Women's Hospitals

The American Women's Hospitals has recently received from Mr. Gibson, special commissioner of the American Red Cross in France, a request for six units, each unit to contain ten medical women, ten nurses' aides, one dentist and four chauffeurs. The Red Cross will supply the nurses required for these units some of which will be placed, under a special arrangement with the French Service de Santé, in French military hospitals where they will care for the American and French wounded soldiers, while other of these groups will be used for refugee work. The first unit, composed of Chicago medical women, which will be known as the Chicago Unit, is already assembled, and one unit will be sent over every month until the entire six are accounted for.

Volunteer Physicians for U. S. Public Health Service Work

Two weeks ago we published an announcement asking for volunteers for permanent work as Acting Assistant Surgeons in the Public Health Service. In addition at the present time the Public Health Service is in urgent need of physicians for temporary duty in connection with the influenza epidemic. The service is organizing this work along state lines in connection with state boards of health. The Surgeon-General of the Public Health Service is anxious to have available physicians in various parts of the country on whom he can call for this temporary emergency work. The salary is $200 a month and $4 per diem allowance in lieu of subsistence. In responding, physicians should furnish the following information:

1. Will serve in his own locality?
2. Will serve in his own state?
3. Will serve in his adjoining states?
4. Will serve anywhere?

As the call is immediate and urgent, it is suggested that any physician who feels that he can do some of this work telegraph to the Surgeon-General, U. S. P. H. S.; Washington, D. C., indicating by number, as above, whether he will serve in his own locality, in his own state, in the adjoining state, or anywhere in the country. Or, if he desires to serve only in his own state he should telegraph to "Public Health Service Officer, care State Board of Health." The U. S. Public Health Service has such an officer in each state except Nevada.

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[1] Engin. News, Sept. 26, 1918, p. 581.

[2] Strauss, M. P.: Puericulture in France, Am. Jour. Dis. Child., October, 1918, p. 207. Lucas, W. P.: Red Cross Infant Mortality Campaign in France, ibid., p. 212. Grulee, C. G.: The Work of the Children's Bureau of the American Red Cross in Lyons, ibid., p. 220. Gelston, C. F.: A Public Health Problem in France, ibid., p. 226. Ladd, Maynard: The American Red Cross in the Meurthe-et-Moselle, ibid., p. 236. Knox, J. H. M.: America's Debt to France, ibid., p. 242.

Public Health Problems

A sixth course of lectures and discussions on "Public Health Problems Under War and After War Conditions," is being held in the Lecture Hall of the Royal Institute of Public Health, London, on Wednesday in October, November and December. The topics and speakers are as follows:

October 9.—"Anthropometry and *National Health.*" By Professor Arthur Keith, M.D., F.R.C.S.

October 16.—"Racial Reconstruction and the Proposed Ministry of Health." By C. W. Saleeby, Esq., M.D., F.R.S.Ed.

October 23.—"The Obviation of Ship-borne Infections." By W. M. Willoughby Esq., M.D.

October 30.—"The Prevention and Abortive Treatment of Venereal Disease." By Lt.-Col. L. W. Harrison, M.B., D.S.O.

November 6.—"Infection and Disinfection in War Time." By Professor J. M. Beattie, M.D.

November 13.—"The Tuberculous Soldier." By Miss Jane Walker, M.D.

November 20.—"The Care of Pensioners and Disabled Combatants in Relation to National Health and Wealth." By Sir John Collie, M.D., C.M.G.

November 27.—"National Kitchens and the National Health." By Alderman C. Spencer, Director of National Kitchens.

December 4.—"The Rôle of the Ports in the Protection of the Health of the Nation." By Professor E. W. Hope, M.D., D.Sc.

December 11.—"The Organisation and Administration of Child Welfare Centres." By G. Eric Pritchard, Esq., M.D., M.R.C.P.

December 18.—"The Proposed Ministry of Health." By Professor William R. Smith, M.D., D.Sc., LL.D., F.R.S.Ed., Sheriff of the City of London.

American Expeditionary Forces' Weekly Bulletin of Disease

The following paragraphs are taken from the *Weekly Bulletin of Disease*, dated September 23, issued for circulation among American medical officers in France:

Why Wait! Pneumonia Won't

Thin out billets and barracks before instead of after an epidemic has broken out. Whenever a command is thoroughly shot through with grippe or bronchitis or there has been an outbreak of diphtheria and simple sore throats, it is found possible as well as desirable to get more space for the men in barracks, even to the extent of putting them under canvas, and in every instance with most favorable results. Shelter tent existence beats a sick bed. Men living in the open in the bitterest weather are uniformly healthier and especially freer from respiratory infections than are men housed in the same climate. See if you can recognize any of the quarters of the men of your command in this description of billets copied from an inspection of a divisional training area.

The Experience of the American Expeditionary Forces with Respiratory Infections

By respiratory infections are understood to be those diseases which are passed by the moist discharges from the bronchi or trachea, the throat and the nose and mouth, namely, the spit, the saliva and spray. Of the diseases included in the nomenclature of the Sick and Wounded Reports of the American Expeditionary Forces the following eleven diseases are considered respiratory infections:

A	B
1. Mumps	1. Bronchitis (acute)
2. Measles	2. Influenza
3. Scarlet fever	3. Pneumonia (lobar)
4. Diphtheria	4. Tonsillitis (acute)
5. Meningitis (meningococcus)	5. Pneumonia (*broncho*)
	6. *Pharyngitis* (acute)

The order in which the two groups are listed above is the order for each group according to the number of days lost from hospitalization of each disease. The incidence rate for pneumonia per 100,000 troops parallels so closely the rate of the other diseases under consideration that the rate of this disease can best be used as a basis of comparison between the experience of the British Armies in France and that of the American Expeditionary Forces.

A.E.F.	1917	B.E.F.	A.E.F.	1918	B.E.F.
	January	8.67	392.3	January	17.18
	February	25.27	155.3	February	6.65
	March	14.58	163.9	March	10.11
	April	10.40	59.0	April	11.80
	May	8.93	16.5	May	7.65
	June	6.23	82.2	June	10.24
66.6	July	7.35	44.6	July	.....
26.9	August	4.88	40.7	August	.....
20.4	September	3.49			
70.21	October	5.88			
66.0	November	6.65			
213.3	December	7.55			

For pneumonia as for the other respiratory infections, here as in civilian experience at home, crowding and close personal contact and exposure while suffering from lowered resistance due to a variety of unfavorable conditions of occupation and environment are apparently the dominant and in many instances the sole determining factors in causing the serious increase of respiratory infections among our troops in France.

Of the 1,613,500 days lost in the American Expeditionary Forces up to June 1, 1918, from all causes, sickness, accident, injury in action and other traumatisms, 1,481,000 days, or 91.78 per cent., were lost because of sickness.

Of the total loss of days due to hospitalization from sickness, 631,226 days, or 42.61 per cent., were due to the eleven respiratory infections under consideration. The total case incidence of these eleven diseases by months from June, 1917, to August, 1918, has been as follows (A) and the rate per 100,000 troops with the American Expeditionary Forces as shown in B.

1917	A.	B.	1918	A.	B.
June	31	221	January	16,843	8,637
July	752	5,013	February	14,412	6,185
August	913	3,226	March	10,135	3,519
September	1,203	2,455	April	6,145	1,634
October	2,798	3,781	May	3,102	571
November	6,925	6,328	June	12,999	1,708
December	12,749	8,499	July	11,096	1,131
			August	12,457	969

The striking effect of the epidemic of influenza coming at a time of year when other respiratory infections are usually at their minimum is shown in the sudden increase in rate in June.

Memorandum for Battalion Surgeons

. . . Never forget, that in the final analysis, the prime and ultimate object of the Medical Department is to assist in the conservation and maintenance at the highest possible point of the fighting efficiency of the line troops. If the men become sick get them well by the best possible means and in the shortest possible time; if wounded, speed their evacuation to hospitals, where definite treatment may be given. Prepare them in every way, by every means available, in the front line stations for evacuation, get them back in the best possible condition. Hold malingerers to their work, but exercise judgment with the slightly ailing men; frequently two or three days' rest treatment in a field hospital will save to the service men with slight indisposition who, if held in the trenches might go on to a severe illness, or to a total loss. The condition in which men are received in the field hospitals from the front lines is always indicative of the efficiency of the men in the advance sectors. It has been noted that some of the diagnosis tags are not being properly made out and that even in the back areas they are often signed by enlisted personnel of the sanitary units. This is, of course, permissible in emergencies, but whenever possible diagnosis tags should be carefully looked over and signed by the medical officer.

Salvaging and Washing Gauze, as Practiced at a Base Hospital

The following method of salvaging and washing gauze, modified from methods in use in civil hospitals in the states, will save 65 to 70 per cent. of used gauze and bandages for reuse. By this method dressings and bandages can be rewashed many times. The process can be handled entirely by convalescent patients, with the supervision of one or two noncommissioned officers or enlisted men of the Medical Detachment who can also run the portable sterilizer:

(*a*) All dressings removed from wounds are saved, in G. I. cans, on surgical wards in dressing rooms, and in operating rooms. These are collected daily and taken to gauze salvage stations which stations should house a portable sterilizer to furnish steam for washing. (*b*) *Sorting.* On receipt at salvage station, dressings are sorted, gauze and bandages separated from cotton and other foreign bodies, all bandages and gauze are saved for washing, except gauze heavily loaded with boric ointment or picric acid. (*c*) *Rinsing.* The gauze and bandages, after sorting, are placed in a large concrete tank of cold water, which is frequently agitated, and changed twice in 24 hours. This is for the purpose of rinsing blood and pus from the dressings. (*d*) *Washing.* After rinsing for 24 hours, gauze is separated from bandages and washed, separately in an ordinary steam washer. If the revolving type is used, the gauze will have to be placed in cord bags, commonly used by steam laundries in washing collars. If the gauze is washed in a small washer of the "Dolly" type, it will not be necessary to place in cord bags. Wash each load one hour with live steam from sterilizers. (*c*) *Second Rinsing and Drying.* On removal from washer, they are carefully rinsed in tepid water and wrung through hand wringers by patients. They are then hung on lines out of doors to dry, or, in wet weather, are dried in a closed room that is heated by a stove. When nearly dry they are picked over and spread out in piles of equal size. (*f*) *Bulk Sterilization.* They are then sterilized in bulk for one hour, sent to the surgical supply room, sorted into small packages, and resterilized in autoclaves for use in operating rooms, dressing rooms, and for ward dressings. In civil hospital practice, in addition to the above, gauze is usually passed through a hypochlorite bleaching solution. In the present emergency, this step can be omitted without detriment.

Distinguished Service Crosses for Medical Officers

Announcement is made of the award of the Distinguished Service Cross to the following medical officers for the acts of gallantry described:

Capt. C. M. WILLIAMS, Medical Corps, Infantry (cannot identify) "For exceptional heroism in action on the Ourcq River, July 31 and August 1, 1918; northwest of Coulonges, France, August 2, 1918, and on the Heights, overlooking the Vesle River, August 3 to 7, 1918. During these three periods of severe fighting, Captain Williams maintained a dressing station close to the advanced lines and worked continuously night and day under heavy artillery and machine-gun fire."

First Lieut. HARRY S. WHEAT, Medical Corps, Infantry (Harry R. Wheat, Mrs. Mary L. Wheat, mother, 1911 Massachusetts Avenue, North Cambridge).—"For extraordinary heroism in action, August 16, 1918, from Sergy to Mont St. Martin, France, between the Ourcq and Vesle Rivers. During the attack on August 1, 1918, he went forward with the first wave and established a dressing station in an advanced position to render immediate aid to the wounded. On August 5, at St. Martin, after having been knocked down by the explosion of a shell and while under severe fire and machine-gun fire, he displayed exceptional coolness and devotion to duty in rendering surgical attention to others who had been wounded by the same shell."

Sergeant LEROY MORNINGSTAR, Medical Department Infantry, has been awarded the Distinguished Service Cross. "Sick, gassed and stunned by shells, he remained at his post of duty under heavy fire and bravely assisted the succoring of soldiers who had been injured near Vaux, France, July 1, 1918."

Private JAY LER ANTES, Medical Department, Infantry, has been awarded the Distinguished Service Cross, posthumously. "He fearlessly exposed himself to barrage and machine gun fire at Cantigny, France, May 28 and 29, 1918, to perform his duties as stretcher bearer in order that the sufferings of wounded might be relieved and lives saved with unselfish heroism. He left the security of the trench to go to wounded in a machine gun emplacement and while performing his noble duty was killed."

Captain CLAUDE A. MARTIN, Welsh, La., Medical Department, Infantry, has been awarded the Distinguished Service Cross. "He operated a battalion dressing station near Vaux, France, July 1, 1918, although the station was practically destroyed by shell fire."

Assistant Surgeon O. D. KING, attached to U. S. M. C.—"For extraordinary heroism in action near the Bois de Belleau, June 19, 1918. On two successive days the regimental aid station in which Surgeon King was working was struck by heavy shells and in each case demolished. Ten men were killed and a number of wounded were badly hurt by falling timbers and stone. Under these harassing conditions this officer continued without cessation his treatment of the wounded, assisting in their evacuation and setting an inspiring example of devotion and courage to the officers and men serving under him."

Passed Assistant Surgeon JOEL T. BOONE, U. S. M. C.—"For extraordinary heroism in action in the Bois de Belleau, France, June 19, 1918. On two successive days the regimental aid station in which Surgeon Boone was working was struck by heavy shells and in each case demolished. Ten men were killed and a number of wounded were badly hurt by falling timbers and stone. Under these harassing conditions this officer continued without cessation his treatment of the wounded, superintending their evacuation, and setting an inspiring example of heroism to the officers and men serving under him. On June 25, 1918, Surgeon Boone followed the attack by one battalion against enemy machine-gun positions in the Bois de Belleau, establishing advanced dressing stations under continuous shell fire."

Passed Assistant Surgeon WILLIAM T. GILL, attached to U. S. M. C.—"For extraordinary heroism in action near Vierzy, France, July 19, 1918. He established a forward dressing station behind the advanced lines and for fifteen hours treated the wounded and directed their evacuation while subjected to intense front and flank fire and in the absence of adequate shelter. His fearlessness under these conditions saved the lives of many wounded who would otherwise have been lost to the service. He disregarded personal danger and remained in an exposed position in order to give immediate care to the unfortunate."

COMMISSIONS OFFERED AND ORDERS TO DUTY ON ACCEPTANCE

Alabama

To Fort Oglethorpe for instruction, Lieuts. V. J. CRAGG, Clanton; T. DUNCAN, Sellers.

To Fort Sam Houston, Texas, Lieut. W. W. ROWAN, Alabama City.

Arizona

To Fort Riley for instruction, Lieuts. A. KIRMSE, Globe; G. E. GOODRICH, Phoenix.

To report to the commanding general, Western Department, Lieut. J. G. WILSON, Willcox.

Arkansas

To Camp Travis, Texas, Lieut. R. H. WILLETT, Jonesboro.

To Fort Oglethorpe for instruction, Lieut. S. HARRIS, Wilmar.

To Fort Riley for instruction, Capt. L. L. PURIFOY, Eldorado; Lieuts. T. HENDERSON, Argenta; P. A. RIDDLER, Fort Smith; C. R. CHESNUTT, Little Rock; E. W. BLACKBURN, Ozark; W. H. MOCK, Prairie Grove.

To Fort Worth, Texas, base hospital, for instruction, Capt. E. F. DAY, Arkansas City.

To Hoboken, N. J., Capt. J. N. CLIATT, Millwood.

To report to the commanding general, Southeastern Department, Lieut. T. E. JEFFERY, Fort Smith.

California

To Camp Cody, N. M., base hospital, for instruction, Capt. W. H. SMITH, Lieut. C. E. EARLY, Los Angeles.

To Camp Fremont, Calif., Capt. D. P. FLAGG, Los Angeles. Base hospital, Capt. C. L. LOWMAN, Los Angeles. Base hospital, for instruction, Capts. A. B. McCONNELL, Fresno; L. P. ADAMS, Oakland.

To Camp Kearney, Calif., Capt. J. H. TURNER, Huntington Park; Lieut. D. N. RICHARDS, Berkeley. Base hospital, Capt. C. P. PROUDFOOT, San Louis Obispo. Base hospital, for instruction, Capts. A. C. THORPE, Los Angeles; J. C. ROBERTSON, Modesto; C. G. HILLIARD, Redlands.

To Camp Lewis, Wash., Capts. J. E. HILL, Azusa; L. C. GREGORY, Fort Bragg; Lieuts. N. A. LEAKE, Gardena; T. H. TRINWORTH, Los Angeles. Base hospital, Capt. R. W. HARTWELL, Santa Barbara.

To Fort Oglethorpe for instruction, Capts. R. C. DUNDAS, J. A. GARLAND, Los Angeles; H. R. PAINTON, Lieut. J. N. TAVLOPOULOS, San Francisco.

To Fort Riley for instruction, Lieuts. J. A. DOUGHERTY, K. C. GUMMESS, San Francisco; F. H. KOEPKE, Watsonville.

To Fort Sam Houston, Texas, Capt. O. F. KONANTZ, Los Angeles.

To San Francisco, Calif., Letterman General Hospital, Lieut. J. SCHWARZ, San Francisco.

Colorado

To Camp Pike, Ark., base hospital, Capt. W. J. CHURCHILL, Longmont.

To Dallas, Texas, Love Field, Lieut. W. G. MUDD, Denver.

To Denver, Colo., Capt. J. H. ALLEN, Lieut. R. LEWIS, Denver.

To Fort Riley for instruction, Lieuts. K. F. ROEHRIG, L. H. RUEGNITZ, Denver.

To report to the commanding general, Southern Department, Lieut. W. W. YATES, Loveland.

Connecticut

To Camp Joseph E. Johnston, Fla., Lieut. T. E. PARKER, Waterbury.

To Fort Oglethorpe for instruction, Lieut. J. W. FRUIN, Waterbury.

To Hoboken, N. J., Lieuts. C. V. CALVIN, Bridgeport; L. F. HERZ, New Haven.

To New Haven, Conn., Yale Army Laboratory School, Capt. L. F. COCHEU, Hampton.

To Plattsburg Barracks, N. Y., Capt. L. A. NOTKINS, New Haven.

District of Columbia

To Camp Greene, N. C., base hospital, Lieut. E. A. TAYLOR, Washington.

Florida

To Camp Joseph E. Johnston, Fla., Capt. J. L. WEEKS, Perry; Lieut. S. E. DRISKELL, Raiford.

To Fort Oglethorpe for instruction, Capt. B. J. BOND, Tallahassee.

Georgia

To Camp Gordon, Ga., base hospital, Major F. P. CALHOUN, Atlanta.

To Camp McClellan, Ala., Lieut. W. A. NORTON, Savannah.

To Camp Wadsworth, S. C., Lieut. S. W. JOHNS, Doles.

To Camp Wheeler, Ga., Lieut. J. W. ODEN, Milledgeville.

To Fort Oglethorpe for instruction, Capts. L. C. ROUGHLIN, J. D. THOMSON; Lieuts. F. C. BIVINGS, Atlanta; B. S. BRANHAM, Sandersville; J. O. BALDWIN, Fort Gaines; J. F. SIGAFOOS, Honey Creek.

Hawaii

To report to the commanding general, Hawaiian Department, Capt. I. J. SHEPHERD, Honolulu.

To San Francisco, Calif., Letterman General Hospital, for instruction, Capt. H. H. BLODGETT, *Honolulu.*

Idaho

To Fort Riley, base hospital, for instruction, Lieut. D. E. CORNWALL, St. Maries. For instruction, Capts. J. FREMSTAD, Burley; J. D. SHINNICK, Cottonwood; C. B. ALLEN, Parma; Lieuts. E. L. HARGIS, Ashton; H. H. DUTTON, Hailey; E. E. HARDY, Kellogg; J. N. DAVIS, Kimberly; E. H. ELMORE, Rupert.

Illinois

To Camp Custer, Mich., Lieut. J. M. DURIN, Chicago. Base hospital, Capts. H. P. BAGLEY, E. P. NORCROSS, Chicago.

To Camp Grant, Ill., Capts. L. H. FRIEDRICH, C. B. KING, U. G. WINDELL; Lieut. J. E. KOONS, Chicago. *To examine the command* for nervous and mental diseases, Lieut. T. G. McLIN, Jacksonville.

To Camp McClellan, Ala., Lieut. A. J. PROMINSKI, Chicago.

To Camp Shelby, Miss., base hospital, for instruction, Capt. F. G. MORRILL, Havana.

To Camp Sherman, Ohio, base hospital, for instruction, Capts. R. S. BARNSBACK, Edwardsville; W. R. PARKES, Evanston.

To Camp Zachary Taylor, Ky., Lieut. H. A. LONG, Effingham.

To Fort Benjamin Harrison, Ind., Lieut. C. R. BATES, Roodhouse.

To Fort Oglethorpe for instruction, Capts. G. A. ALMFELT, C. E. BODDIGER, Chicago; F. P. HORAN, Evanston; L. A. BURHANS, Peoria; Lieuts. A. J. KLINT, C. W. LENHART, Danville; W. F. BOWMAN, Fishhook; R. G. DAKIN, Sandwich.

To Fort Riley for instruction, Capts. W. A. UEHREN, Aurora; W. T. ZIEGLER, Canton; A. PECH, Chicago; W. N. MacCHESNEY, Chicago Heights; O. P. GRANT, Easton; W. A. GOTT, Washington; Lieuts. O. F. REINHARDT, Aviston; E. A. BEHRENDT, Bloomington; W. R. ABBOTT, G. L. APFELBACH, M. L. ARKIN, N. L. BLITZSTEN, E. J. COHN, C. C. COOLEY, C. F. GOETZINGER, L. CROTOWSKI, F. C. KLOOS, C. A. KROGH, T. F. LEATHERWOOD, J. G. WIEDDER, J. B. WILCOX, E. F. WINTERBERGER, Chicago; O. J. CULBERTSON, East St. Louis; C. S. WILLIAMSON, Fairmount; R. M. HATHAWAY, Farmer City; C. H. FOOTE, Girard; C. L. VANATTA, Hidalgo; A. C. MOORHEAD, Leland; W. M. CATON, Mason City; B. H. HARDINGER, Mattoon; F. E. INKS, Polo; M. A. NIX, Princeton; C. V. WINSETT, Prophetstown; J. C. MURPHY, Ridgeway; A. J. DALTON, St. Joseph.

To Roland Park, Md., Lieut. W. T. MORFETT, Blue Mound.

Indiana

To Ann Arbor, Mich., State Psychopathic Hospital, for intensive training, Capt. H. B. SHACKLETT, New Albany.

To Camp Meade, Md., Lieut. G. R. HAYS, Richmond.

To Camp Sevier, S. C., Lieut. J. P. WOLF, New Market. Base hospital, Capt. J. R. SICKLER, Frankfort.

To Camp Zachary Taylor, Ky., base hospital, Capt. C. E. DUFFIN, Richmond. Base hospital, for instruction, Capt. C. E. VARIER, South Bend.

To Colonia, N. J., Capt. W. C. WINSTANDLEY New Albany.

To Denver, Colo., Capt. B. ERDMAN, Indianapolis.

To Fort Benjamin Harrison, Ind., Lieuts. J. C. KINCAID, Indianapolis; J. A. MEINER, Kokomo.

To Fort Oglethorpe for instruction, Capts. J. W. LITTLE, C. W. MARXER, Indianapolis; C. E. GILLESPIE, Seymour; O. S. TAYLOR, Whitestown; Lieuts. G. ALEXANDER, Bedford; I. J. GILL, Dugger; E. B. FLAVIEN, Logansport.

To Fort Riley, Capt. F. RODENBECK, Arcadia. For instruction, Capts. W. G. CULLODEN, F. P. REID, Indianapolis; J. D. STURDEVANT, Noblesville; Lieuts. C. M. [illegible]; W. A. HODGES, Emison; I. T. OLIPHANT, Farmersburg; [illegible] D. SKEEN, Gary; C. R. PRICE, Geneva; C. U. THRALLS, Hymera; H. S. LEONARD, A. L. WALTERS, Indianapolis; C. M. WRAY, New Richmond; V. A. SHANKLIN, West Terre Haute.

Iowa

To Camp Dodge, Iowa, Lieuts. N. S. BEVINS, Fort Atkinson; F. E. E. ST. CLAIR, Hampton. Base hospital, for instruction, Lieut. G. B. BROWN, Clairion.

To Camp Grant, Ill., Capt. J. H. SCHRUP, Dubuque. Base hospital, for instruction, Lieut. P. M. DAY, Jr., Barnes City.

To Fort Oglethorpe for instruction. Capts. E. RICE, Ames; I. W. TRAVERSE, Fort Mediann; B. COURSHON, Sioux City; Lieuts. R. R. HARRIS, Dubuque; R. E. BRISBINE, Mason City; H. M. HUSTON, Ruthven; F. L. NICHOLS, Sutherland.

To Fort Riley for instruction, Capt. O. KREJSA, Cedar Rapids; Lieuts. S. M. FERGUSON, Avoca; C. E. LOWREY, Centerville; B. F. McNEILL, Charles City; L. W. WARD, Fairbank; A. A. ROSE, Gilbert; A. J. MEYER, Hawarden; A. F. WATTS, Iowa City; J. J. PITCHER, Mt. Pleasant; V. O. MUENCH, Nichols; I. A. SNYDER, Roland; C. C. COLLESTER, Spencer; F. S. BOWEN, Woodburn.

Kansas

To Camp Grant, Ill., Lieut. R. M. TROUP, Garden City.

To Fort Oglethorpe for instruction, Capts. J. G. KENNEDY, Altoona; J. L. GROVE, Newton; Lieut. E. L. KALBFLEISCH, Newton.

To Fort Riley for instruction, Capts. B. R. RIEY, Benedict; H. A. BROWNE, Galena; F. K. MEADE, Hays; Lieuts. L. M. HINSHAW, Bennington; C. R. McFARLAND, Blue Rapids; A. JOHNSON, Clyde; R. P. PIERCE, Dunkirk; W. R. MORTON, Green; C. N. JOHNSON, Wichita.

Kentucky

To Ann Arbor, Mich., State Psychopathic Hospital, for training, Lieut. W. E. RENDER, Lakeland.

To Camp Greene, N. C., Lieuts. S. M. LINVILLE, Centerville; O. D. BROCK, London; J. S. WHITSON, Slaughters; D. J. THOMPSON, Webbville.

To Camp Jackson, S. C., base hospital, for instruction, Capt. J. A. DAVIS, Covington.

To Camp Joseph E. Johnston, Fla., Capt. J. M. FERGUSON, Central City; Lieut. C. L. NICHOLS, Louisville.

To Camp Meade, Md., Lieut. M. COMBS, Pineville.

To Camp Sevier, S. C., Lieut. B. C. OVERBOY, La Center.

To Fort Benjamin Harrison, Capts. W. T. BARNETTE, Springfield; B. J. NEARY, Waverly.

To Fort Oglethorpe for instruction, Capts. J. M. SALMON, Ashland; J. D. JACKSON, V. RAWSON, Danville; C. H. STRUBLE, Dayton; C. A. VANCE, Lexington; G. S. BROCK, London; D. A. PENICK, Nicholasville; E. B. SMITH, Shelbyville; W. A. BUSH, Winchester; Lieuts. H. S. HARNED, Boston; E. L. GOWDY, Campbellsville; J. N. SMITH, Christianburg; A. G. CALDWELL, Covington; A. P. DOWDEN, Eminence; S. W. COHN, Fulton; C. R. MORTON, Hanson; A. E. POPHAM, Knottsville; H. F. POHLMEYER, Lexington; C. W. KASH, Foorefield; P. K. McKENNA, Mount Sterling; A. R. KEMPF, Olmstead; H. V. USHER, Oscar; M. H. WALKER, Panther; O. P. CHAPMAN, Port Royal; D. G. SKAGGS, Prospect; E. BARR, Rome; H. B. ANDERSON, Shawhan; W. L. MORSE, St. Charles.

To Fort Riley for instruction, Lieuts. J. N. BAILEY, Fredonia; J. W. FITCH, Louisville.

To Newport News, Va., Lieut. E. E. LINVILLE, Mount Olivet.

Louisiana

To Camp Beauregard, La., Lieut. J. F. POLK, Slidell. Base hospital, Lieut. E. McCARTHY, New Orleans.

To Camp Joseph E. Johnston, Fla., Lieuts. J. W. A. SMITH, New Orleans; T. BUTLER, St. Francisville.

To Fort Oglethorpe for instruction, Lieuts. A. B. CHILDS, Eunice; J. G. HIRSCH, Harvey; C. A. BEATLE, J. B. HARNEY, H. B. SEEBOLD, New Orleans; M. S. PICARD, Shreveport; A. M. PETERS, Winnfield.

To New York, Neurological Institute, for instruction, Lieut. J. I. PETERS, Alexandria.

Maine

To Newport News, Va., Capt. E. CAPLAN, Portland.

Maryland

To Camp Jackson, S. C., base hospital, for instruction, Lieut. W. N. PALMER, Easton.

To Camp Meade, Md., base hospital, Capt. H. K. FLECKENSTEIN, Baltimore.

To Fort Oglethorpe for instruction, Lieuts. I. C. DICKSON, E. C. LEHNERT, Baltimore; J. H. BAY, Harve de Grace; F. A. MILLER, Salisbury.

To New Haven, Conn., Yale Army Laboratory School, for instruction, Lieut. H. FRIED, Baltimore.

To Newport News, Va., Capt. B. S. HANNA; Lieuts. A. G. WEBSTER, Baltimore; W. H. COULBOURN, Crisfield; F. T. BROOKS, Federalsburg.

Massachusetts

To Camp Abraham Eustis, Va., Lieut. W. W. MARSTON, Newton.

To Camp Devens, Mass., base hospital, Major F. H. VERHOEFF, Boston. Base hospital, for instruction, Capt. J. P. GRAHAM, Springfield; Lieut. A. E. DARLING, Lynn.

To Camp Dix, N. J., base hospital, for instruction, Lieut. G. J. CONNOR, Haverhill.

To Camp Meade, Md., Lieut. H. M. KEMP, Greenfield.

To Fort Oglethorpe for instruction, Capts. F. E. DRAPER, J. S. MAY, Boston; T. F. BRASSIL, Cambridge; R. A. RICE, Fitchburg; W. L. HALE, North Attleboro; A. L. BROWN, Winchester; Lieuts. C. E. MEYER, Chicopee; P. J. SULLIVAN, Dalton; G. A. CONNOR, East Cambridge; F. F. DEXTER, Longmeadow; E. L. HILL, Millis; A. O. METIVIER, [illegible] CONNELL, Walpole; R. M. MARR, Westfield; M[illegible]

To Hoboken, N. J., Lieuts. L. LAKE, Cambridge; R. N. BROWN, Malden.

To New Haven, Conn., Yale Army Laboratory School, for instruction, Lieut. F. D. JONES, Springfield.

To Newport News, Va., Lieut. M. M. MURPHY, Brockton.

Michigan

To Camp Custer, Mich., base hospital, for instruction, Lieuts. B. S. LONEY, Detroit; E. S. THORNTON, Muskegon.

To Camp Zackary Taylor, Ky., Lieuts. G. SEWELL, Detroit; J. J. O'MEARA, Jackson.

To Fort Benjamin Harrison, Lieut. L. E. WESTCOTT, Cobleville.

To Fort Oglethorpe for instruction, Capt. G. A. SEYBOLD, Jackson; Lieut. H. L. MECK, Petersburg.

To Fort Riley for instruction, Lieuts. L. E. WERRY, Calumet; F. C. MUSSER, C. M. TURRELL, Detroit; E. T. BRUNSON, Ganges.

To Washington, D. C., Lieut. C. W. HEALD, Battle Creek.

Minnesota

To Camp Dodge, Iowa, base hospital, Capt. G. E. BENSON, Minneapolis. Base hospital, for instruction, Capt. A. N. COLLINS, Duluth.

To Camp Grant, Ill., base hospital, for instruction, Lieut. C. LEMBKE, St. Paul.

To Camp Lee, Va., base hospital, Capt. P. A. HIGBEE, Minneapolis.

To Fort Riley for instruction, Lieuts. C. F. CARSTENS, Hibbing; D. M. O'DONNELL, Ortonville; B. W. JARVIS, St. Paul.

To Newport News, Va., Capt. J. L. CRENSHAW, Rochester.

Mississippi

To Camp Beauregard, La., Lieut. J. M. Smith, Magnolia.

To Camp Joseph E. Johnston, Fla., Capts. H. L. McKINNON, Hattiesburg; W. D. McCALIP, Yazoo City; Lieuts. O. H. OLSEN, Hattiesburg; B. C. CRISLER, Itta Bena; B. F. McARTHUR, Lizelia; D. T. BROOK, McComb; H. B. OLIVER, Sledge.

To Camp McClellan, Ala., Lieut. J. C. BUCK[illegible]ville.

To Fort Oglethorpe for instruction, Capt. M. [illegible] Lieuts. R. E. HONNOLL, Ashland; D. W. MAGEE, [illegible] PEARCE, Falkner; O. O. AUSTIN, Harperville.

To Fort Riley for instruction, Lieut. L. H. BREVARD, Eudora.

Missouri

To Camp Beauregard, La., base hospital, for instruction, Lieut. E. BOEHM, St. Louis.

To Camp Dodge, Iowa, base hospital, Capt. S. L. GETTYS, St. Louis.

To Camp Grant, Ill., base hospital, Lieut. C. D. SCOTT, St. Louis.

To Camp Logan, Texas, base hospital, Lieut. H. G. PIEPER, St. Louis.

To Camp Pike, Ark., base hospital, Capt. O. A. SMITH, Farmington.

To Camp Zachary Taylor, Ky., base hospital, for instruction, Capt. W. H. GENTRY, Carthage.

To Fort Oglethorpe for instruction, Capt. J. H. FULBRIGHT, Springfield; Lieuts. U. G. STREIBY, Brownington; J. W. L. BRENNAN, St. Louis; J. L. HORN, Williamsville.

To Fort Riley for instruction, Capts. T. P. FORE, Brookfield; W. J. CLARK, Maysville; E. W. SHRADER, Moberly; A. L. McNAY, Pacific; B. B. SIMMONS, St. Joseph; C. E. DUDLEY, E. LOEW, J. A. LOTZ, C. H. POPE, St. Louis; Lieuts. G. H. SHIRLEY, Argyle; J. BEST, High Hill; J. A. BEEBE, H. CZARLINSKY, C. F. MARTIN, Kansas City; J. F. GULIC, Koshkonong; H. W. OYLER, Mill Grove; E. E. EVANS, New Florence; C. H. CULLERS, Spickard; R. L. BYRD, H. B. DePEW, J. E. DOLL, M. J. GLASER, C. F. HENKE, C. R. REIDER, P. H. SCHERER, F. J. SMITH, W. F. STEIN, O. VIERLING, St. Louis; A. TRAUBITZ, Vanduser; A. J. COURSON, Williamsburg.

Montana

To Camp Dodge, Iowa, base hospital, for instruction, Capt. W. V. KINGSBURY, Butte.

To Camp Grant, Ill., base hospital, for instruction, Capt. J. G. THOMPSON, Helena.

To Fort Riley for instruction, Lieuts. R. B. DURNIN, F. E. KEENAN, Great Falls.

To New Haven, Conn., Yale Army Laboratory School, for instruction, Lieut. J. C. F. SIEGFREIDT, Bearcreek.

Nebraska

To Camp Bowie, Texas, base hospital, for instruction, Lieut. C. C. HICKMAN, Lincoln.

To Camp Dodge, Iowa, base hospital, for instruction, Lieut. R. L. IVINS, Crawford.

To Camp Gordon, Ga., base hospital, Capt. I. S. CUTTER, Omaha.

To Fort Oglethorpe for instruction, Lieuts. T. T. HARRIS, B. A. McDERMOTT, Omaha.

To Fort Riley for instruction, Capt. F. J. KALAL, Clarkson; Lieuts. G. W. BRIGGS, Arthur; C. E. KIDDER, Holstein.

New Hampshire

To Fort Oglethorpe for instruction, Lieuts. L. B. MARCOU, Berlin; F. H. LOVEJOY, Milford.

To report to the commanding general, Southeastern Department, Capt. J. E. BLAKE, Lisbon.

New Jersey

To Bound Brook, N. J., Lieut. J. T. LEAHY, Bound Brook.

To Camp A. A. Humphreys, Va., Capts. H. D. McCORMICK, Kenvil; F. A. ROBERTS, Newark.

To Camp Colt, Pa., Lieut. G. H. LEBRET, Secaucus.

To Camp Crane, Pa., Lieuts. G. R. WRIGHT, Landing; H. H. RICH, Newark.

To Camp Devens, Mass., base hospital, Capt. E. A. CURTIS, Newark.

To Camp Dix, N. J., base hospital, Capt. S. W. CLARK, Atlantic City; Lieut. J. F. BOWMAN, Irvington.

To Camp Jackson, base hospital, for instruction, Lieut. W. SPICKERS, Paterson.

To Camp Lee, Va., to examine the command for nervous and mental diseases, Lieut. G. B. McMURRAY, Greystone Park.

To Camp McClellan, Ala., base hospital, Lieut H. G. HOLLER, Newark.

To Camp Meade, Md., Lieut. A. W. BOWKER, Atlantic City.

To Camp Sevier, S. C., to examine the command for nervous and mental diseases, Lieut. G. W. DAVIES, Cedargrove.

To Camp Wadsworth, S. C., to examine the command for nervous and mental diseases, Lieut. G. R. HAMPTON, Greystone Park.

To Fort Oglethorpe for instruction, Capts. W. H. AXFORD, Bayonne; T. P. BOYLE, Newark; H. D. WEBB, Orange; Lieuts. M. S. FRANK, C. J. LARKEY, Bayonne; H. C. UPCHURCH, Dover; A. V. SIMMONS, Irvington; E. L. CREVELING, N. L. ROWE, JR., Jersey City; R. M. COHN, L. R. DAVIS, Newark; H. C. CASSINI, Orange; H. B. HESS, C. J. KANE, Paterson; W. COTTRELL, Rutherford; I. M. DANE, South Orange; W. S. McDANNALD, Tenafly; A. UREVITZ, West Hoboken; W. FESSLER, West New York.

To Hoboken, N. J., Capt. W. GAUCH, Newark; Lieuts. J. J. HUNT, Bayonne; J. P. COLL, Newark; J. G. COTTRELL, Perth Amboy.

To Lakewood, N. J., Capt. T. ALSOP, Atlantic City.

To New Haven, Conn., Yale Army Laboratory School, for instruction, Lieut. H. A. SCHEPPACH, Newark.

To Newport News, Va., Lieut. H. J. GILBERT, Newark.

To Washington, D. C., St. Elizabeth's Hospital, for intensive training, Lieut. N. W. LAWLESS, Morristown.

New Mexico

To Fort Riley for instruction, Lieut W. M. LANCASTER, Plain.

To report to the commanding general, Southern Department, Capt. R. L. BRADLEY, Roswell.

New York

To Camp Crane, Pa., Lieuts. A. W. WAGNER, Buffalo; L. H. SMITH, New York.

To Camp Devens, Mass., Lieuts. J. W. W. DIMON, Utica. Base hospital, Capt. E. R. LEWIS, Rochester. Base hospital, for instruction, Capts. H. G. BENTZ, J. H. CARR, Buffalo.

To Camp Dix, N. J., base hospital, Lieuts. C. W. BETHUNE, Buffalo; D. A. LUBARSKY, New York. Base hospital, for instruction, Capt. C. H. GOODRICH, Brooklyn; Lieut. B. W. SEAMAN, Rockville Center.

To Camp Hancock, Ga., base hospital, for instruction, Capt. H. D. FURNISS, New York.

To Camp Jackson, S. C., Lieut. F. X. MARINARO, Brooklyn.

To Camp Logan, Texas, base hospital, Lieut. M. T. SIEGEL, New York.

To Camp McClellan, Ala., base hospital, Capt. S. H. DECOSTE, Brooklyn.

To Camp Meade, Md., Lieuts. N. J. McCAUL, Brooklyn; J. SAFIAN, New York. Base hospital, for instruction, Lieuts. H. F. VAN LOON, Albany; H. M. KALVIN, Brooklyn.

To Camp Sheridan, Ala., base hospital, Capt. M. J. TIERNEY, [illegible]

[illegible] *S. C.,* base hospital, for instruction, Lieut. S. O. [illegible]

[illegible] *a.,* base hospital, for instruction, Lieut. A. H. [illegible]

[illegible] *ylor, Ky.,* base hospital, Capt. S. R. FOWLER, Syracuse.

To Colonia, N. J., Lieut. A. J. WESTLAKE, Elmira.

To Fort Oglethorpe for instruction, Capts. P. W. COSTELLO, Brooklyn; A. E. BRENNAN, F. ST. J. HOFFMAN, F. B. WILLARD, Buffalo; W. B. BROOKS, Mohawk; A. H. MOORE, New Rochelle; M. BRANNER, E. BRUNOR, New York; A. C. KLINE, Prospect; C. A. MARION, [illegible]; P. S. YOUNG, Sidney; W. P. PIN- [illegible] euts. H. B. BROWNELL, J. M. FLAN- [illegible] A. MOORE, A. G. OSTWALD, F. H. [illegible] Buffalo; L. C. BROUGHTON, Castle; W. BRADY, Elmira; L. A. BOUTON, Fonda; W. G. PHIPPS, Mount Vernon; D. G. EWART, S. KUTSCHER, E. W. MACADAM, H. H. SHIRAS, New York; C. G. SMITH, Port Jefferson; A. V. WALKER, Rochester; R. K. ROSENBERGER, Schenectady; G. MOUNT, South Butler; R. W. RENWICK, Staten Island; C. H. EVANS, Syracuse; A. E. RICHMOND, Wayland.

To Fort Porter, N. Y., Capt. P. SMITH, New York.

To Hoboken, N. J., Capts. J. E. GOLDING, Brooklyn; F. A. TEEPELL, Russell; Lieuts. R. H. GRAY, Brooklyn; P. C. CAMPBELL, J. L. GALLAGHER, E. P. REIMANN, Buffalo; R. H. DUNNING, Eastwood; G. H. LEADER, Penn Yan; J. A. BURNS, Wilson.

To New Haven, Conn., Lieut. M. NORMAN, Bedford Hills.

To New Haven, Conn., Yale Army Laboratory School, for instruction, Capt. W. B. STONE, Schenectady; Lieuts. F. D. CARR, Batavia; J. M. TAMRAZ, Brooklyn.

To Newport News, Va., Lieuts. A. E. GREENWOOD, R. C. WEITHAS, Brooklyn; J. G. McGILLICUDDY, Little Falls; E. C. DOUGLAS, New York; H. MACDONALD, Schenectady.

To New York, Cornell Medical College, for instruction in roentgenology, Lieut. A. S. UNGER, New York. Neurological Institute, for intensive training, Capt. G. C. FISK, Buffalo.

To Plattsburg, N. Y., Capt. W. TIMME, New York.

To report to the commanding general, Southeastern Department, Capts. J. P. BARR, B. H. BRADY, Buffalo.

To Rockefeller Institute, Capts. T. S. GITHENS, J. P. HOGUET, New York.

To Syracuse, N. Y., Lieut. D. BRUMBERG, Buffalo.

To Washington, D. C., St. Elizabeth's Hospital, Capt. D. C. MAIN, Alfred; for intensive training, Capt. J. F. SHANAHAN, Buffalo; Lieut. H. C. BURGESS, Canandaigua.

To Williamsbridge, N. Y., Major E. S. THOMSON, New York; Lieut. L. BROOKS, Rome.

North Carolina

To Fort Oglethorpe for instruction, Capt. W. J. McANALLY, High Point; Lieut S. F. TILLOTTSON, King.

To New Haven, Conn., Yale Army Laboratory School, for instruction, Lieut. H. B. HIATT, High Point.

To Newport News, Va., Lieut. B. K. BLALOCK, North Charlotte.

North Dakota

To Fort Riley, base hospital, Lieut. R. C. HERON, Tolma. For instruction, Lieut. F. E. EWING, Kennare.

Ohio

To Ann Arbor, Mich., State Psychopathic Hospital, Lieut. J. H. BERRY, Lima.

To Camp Custer, Mich., Lieuts. O. P. ULRICH, Orrville. Base hospital, for instruction, Lieut. R. H. McKAY, Akron.

To Camp Meade, Md., Lieuts. P. E. BEACH, Cleveland; F. C. DUCKWALL, Scott.

To Camp Sevier, S. C., Lieut. H. D. SCHELL, Hamilton.

To Camp Sherman, Ohio, base hospital, Capt. E. H. STONE, Cleveland.

To Camp Zachary Taylor, Ky., base hospital, for instruction, Capt. A. CROTTI, Columbus; Lieut. O. BEHMAN, Cincinnati.

To Fort Benjamin Harrison, Lieuts. L. L. McHENRY, Cheviot; L. C. KINTZLER, Cleveland.

To Fort Oglethorpe for instruction, Capts. O. M. SHIREY, Cleveland; H. H. FISHER, Columbus; W. SHIPE, Middletown; Lieuts. V. E. KAUFMAN, J. F. O'HARA, Canton; J. A. BLACK, E. M. DEACON, W. R. GOFF, A. W. WARREN, Cleveland; S. M. BECK, Dayton; C. G. HISSONG, Hamler; J. M. COLEMAN, Loveland; E. R. ALEXANDER, Rittman; J. B. KLINGENSMITH, Sebring; J. E. FURRY, Springfield; C. W. MONTGOMERY, Sycamore; E. F. TODHUNTER, Washington; E. E. COBURN, West Milton; R. G. MOSSMAN, Youngstown.

To Hoboken, N. J., Lieut. H. B. LARIMORE, Sparta.

To New Haven, Conn., Lieut. C. C. KENNEDY, Bethel.

To New York, Cornell Medical College, for instruction, Lieut. G. F. THOMAS, Cleveland.

To report to the commanding general, Southeastern Department, Lieut. J. R. JAMESON, Apple Creek.

Oklahoma

To Camp Kelly, South Antonio, Texas, Lieut. H. C. SCHENCK, Muskogee.

To Fort Oglethorpe for instruction, Lieuts. J. J. BARBER, Laverne; E. B. MILLER, Wakita.

To Fort Riley for instruction, Lieuts. H. A. HOWELL, Holdenville; J. S. McFADIN, Hollis; W. G. PHILLIPS, Skistook; J. M. BUCHANAN, Tulsa; F. D. MARTIN, Vinita.

Oregon

To Camp Lewis, Wash., Capt. R. V. MOORE; Lieuts. J. H. CARRICO, Portland; E. H. HOBSON, Scio. Base hospital, for instruction, Capt. M. K. HALL, LaGrande.

To Fort Riley for instruction, Lieuts. M. M. LEVY, W. A. TRIMBLE, Portland.

Pennsylvania

To Camp Crane, Pa., Lieut. A. SOFFEL, Pittsburgh.

To Camp Devens, Mass., base hospital, Lieut G. J. FELDSTEIN, Pittsburgh.

To Camp Gordon, Ga., base hospital, Capt. S. S. BROWN, Pittsburgh.

To Camp Hancock, Ga., base hospital, Lieut. A. H. MURRAY, Sayre.

To Camp Leach, D. C., Lieut. C. L. BOWMAN, Pittsburgh.

To Camp McClellan, Ala., base hospital, for instruction, Capt. H. S. FISH, Sayre.

To Camp Meade, Md., Lieuts. W. J. STEIN, Armore; A. H. BUNSHAW, Erie; V. A. WILLIAMS, Pittsburgh. Base hospital, for instruction, Capt. S. D. MOLYNEAUX, Philadelphia.

To Camp Pike, Ark., base hospital, Lieut. E. S. WALLS, Pittsburgh.

To Camp Sevier, S. C., Lieut. F. W. RUDOLPH, Pittsburgh.

To Camp Shelby, Miss., base hospital, Capt. C. S. REBUCK, Harrisburg.

To Camp Sheridan, Ala., base hospital, Capt. F. P. STECK, Shamokin. Base hospital, for instruction, Lieut. T. E. TEACH, Lock Haven.

To Camp Sherman, Ohio, base hospital, for instruction, Lieut. G. S. HACKETT, Belle Vernon.

To Camp Wheeler, Ga., base hospital, for instruction, Capt. T. L. CHASE, Philadelphia.

To Fort Oglethorpe for instruction, Capts. F. M. SUMMERVILLE, Oil City; G. M. FERGUSON, C. P. KATZENSTEIN, Philadelphia;

B. A. BOOTH, C. C. MARSHALL, Pittsburgh; Lieuts. J. C. ATWELL, Butler; P. A. LONERGAN, Dickson City; H. N. THISSELL, C. V. VEDDER, Philadelphia; J. J. KVATSAK, T. F. MOORE, Pittsburgh; M. E. GRUVER, [illegible] GARDNER, E. A. McLAINE, Scranton; S. A. [illegible] A. E. TORRENS, West View; H. S. FLOYD, Wilkinsburg; H. B. JONES, Woodlawn.

To Mineola, N. Y., Hazelhurst Field, for instruction, Capt. S. H. HORNE, Philadelphia.

To Hoboken, N. J., Lieuts. H. E. MOORE, Ambridge; W. P. GEMMILL, Monessen; W. J. DAVIDSON, New Castle.

To Newport News, Va., Lieuts. J. P. DOUGHERTY, Ashley; R. O. BLACKLOCK, McKeesport; W. T. DODDS, Pittsburgh; P. E. BIGGINS, Sharpsville; J. H. CORWIN, Washington.

South Carolina

To Camp Lee, Va., Lieut. J. E. LUCAS, Great Falls.

To Camp Sevier, S. C., base hospital, for instruction, Capt. J. H. HUNTER, Spartanburg.

To Fort Oglethorpe for instruction, Lieuts. H. J. STUCKY, Bamberg; J. C. SEASE, Charleston; J. L. MARSHALL, Greenwood; C. H. ESDORN, Walterboro.

South Dakota

To Fort Riley for instruction, Lieut. W. S. CHAPMAN, Mellette.

Tennessee

To Camp Sevier, S. C., base hospital, Capt. F. L. YOUNG, Knoxville.

To Fort Oglethorpe for instruction, Capts. R. O. KIBLER, Cleveland; W. O. FLOYD, Nashville; Lieuts. W. J. HEWSON, Ducktown; E. H. BAIRD, J. B. BERRY, D. L. FLANARY, Dyersburg; G. C. HUTSON, Knoxville; J. W. MASON, C. W. ROBINSON, Memphis; E. A. GILBERT, St. Elmo; R. H. RUBLE, Washington College.

To Newport News, Va., Lieut. R. B. FLANIKEN, Brunswick.

Texas

To Camp Bowie, Texas, base hospital, Capt. W. G. COOK, Fort Worth.

To Camp Cody, N. M., base hospital, Capt. J. W. McLAUGHLIN, Austin.

To Camp Kelly, Texas, Capt. S. C. GAGE, Waco; Lieuts. D. A. MOHLER, Dallas; E. A. MONTENYOHL, El Paso.

To Camp Shelby, Miss., base hospital, Lieut. M. H. BOERNER, Austin.

To Camp Travis, Texas, Lieut. P. A. BAZE, Mason.

To Denver, Colo., Lieuts. J. W. POULTER, Dallas; J. L. McKNIGHT, El Paso.

To Fort Oglethorpe for instruction, Capts. T. R. BLACK, Paris; R. Y. LACY, Pittsburgh; M. W. SHERWOOD, Temple; Lieuts. W. J. JINKINS, Galveston; J. H. BURNETT, Kopperl; S. C. BALL, New Boston.

To Fort Riley for instruction, Capt. J. T. LAWSON, Bowie; Lieuts. C. G. STRICKLIN, Clarendon; H. ROWE, Denton; L. O. FOSTER, Fort Worth; T. F. YATER, Godley; J. M. DOSS, Pharr; E. W. MOSS, Quail; J. M. VAN NESS, San Marcos; W. P. DINGLE, Valley Mills.

To Fort Sam Houston, Texas, Lieut. E. V. DICKEY, Dallas.

To New Haven, Conn., Yale Army Laboratory School, for instruction, Capt. L. YATER, Cleburne.

To report to the commanding general, Southern Department, Lieut. W. F. HOLLAND, Santa Ana.

Utah

To Fort Riley for instruction, Capt. S. W. BADCON, Ogden.

Vermont

To Camp Devens, Mass., base hospital, Capt. L. A. NEWCOMB, Montpelier.

To Fort Oglethorpe for instruction, Lieut. C. E. WARD, Hartland.

To Hoboken, N. J., Lieut. H. P. GREENE, Brattleboro.

Virginia

To Camp Greene, N. C., Capt. C. R. ANDERSON, Winchester; Lieut. G. G. HANKINS, Phoebus.

To Camp Sevier, S. C., base hospital, Lieut. E. L. RAWLS, Suffolk.

To Fort Oglethorpe for instruction, Capts. J. A. RICE, Heathsville; O. H. McCLUNG, Lexington; J. D. OSBORNE, Petersburg; Lieut. L. P. MILLIGAN, Hopewell.

To Newport News, Va., Capts. J. T. BUXTON, Newport News; W. P. JONES, Urbanna; Lieut. S. L. STALLARD, Newport News.

To report to the commanding general, Southeastern Department, Lieut. C. P. OBENSCHAIN, Kerrs Creek.

Washington

To Camp Lewis, Wash., Capt. W. A. SMITH, Centralia; Lieuts. A. POSKA, Seattle; F. H. CARVER, Waitsburg. Base hospital for instruction, Capt. W. S. DURAND, Everett.

West Virginia

To Camp Colt, Pa., Lieut. C. N. REGER, Vandalia.

To Camp Meade, Md., Lieuts. A. H. HOGE, Bluefield; G. C. BLAKE, Tunnelton.

To Camp Sevier, S. C., Lieut. H. S. KEISTER, Fairmont.

To Fort Oglethorpe for instruction, Capts. A. M. FREDLOCK, Elkins; L. A. WILLIAMS, Huntington; Lieuts. D. V. SMITH, Letart; M. W. VIEWEG, Wheeling.

To Newport News, Va., Capt. E. T. W. HALL, Freemansburg; Lieut. A. A. SCHERR, Eglon.

Wisconsin

To Fort Oglethorpe for instruction, Capt. I. G. THOMPSON, Eau Claire.

To Fort Riley for instruction, Capt. L. P. A. VALENTINE, Milwaukee; Lieuts. R. CAHOON, Baraboo; A. J. WIESENDER, Berlin; C. E. MYERS, Milladore; R. F. BRAUN, P. J. MERTEN, Milwaukee; J. M. CONWAY, Spring Valley.

To New Haven, Conn., Yale Army Laboratory School, for instruction, Lieut. L. R. FOWSER, Manawa.

Wyoming

To Fort Riley for instruction, Lieut. B. SHIPMAN, Rock Springs.

ORDERS TO OFFICERS OF THE MEDICAL CORPS, U. S. ARMY

Alabama

To Camp Custer, Mich., to examine the command for cardiovascular diseases, from Lakewood, Capt. H. W. BASS, Gadsden.

To Camp Hancock, Ga., base hospital, for instruction, from Fort Oglethorpe, Capt. G. H. WINTHROP, Mobile.

To Camp Jackson, S. C., base hospital, for instruction, from Fort Oglethorpe, Capt. N. P. COCKE, Birmingham.

To Camp Joseph E. Johnston, Fla., base hospital, for instruction, from Fort Oglethorpe, Lieut. J. R. CHISOLM, Marion Junction.

To Fort Bliss, Texas, from Fort Oglethorpe, Lieut. W. F. HAMILTON, Pell City.

Arkansas

To Camp Crane, Pa., mobile hospital, from Fort Oglethorpe, Lieut. R. R. DALE, Texarkana.

To Camp Hancock, Ga., base hospital, from Fort Oglethorpe, Capt. W. D. JUDKINS, Little Rock.

To Camp Zachary Taylor, Ky., base hospital, from Fort Oglethorpe, Lieut. F. L. WILSON, Hermitage.

To Hoboken, N. J., from Camp Upton, Capt. C. P. WILSON, JR., Fort Smith.

California

To Camp A. A. Humphreys, Va., from Newport News, Capt. J. H. PARKINSON, Sacramento.

To Camp Crane, Pa., evacuation hospital, from San Francisco, Major C. G. TOLAND, Los Angeles.

To Camp Fremont, Calif., to examine the command for nervous and mental diseases, from Mendocine, Capt. J. A. COLLIE, La Manda Park.

To Camp Meade, Md., evacuation hospital, from Fort Oglethorpe, Lieut. D. E. SHEA, Los Angeles.

To Fort Benjamin Harrison, base hospital, from Camp Lewis, Lieut. W. A. REED, Covina.

To Fort Leavenworth, Kan., Lieut. C. E. EARLY, Los Angeles.

To Pittsburgh, Pa., from Camp Lewis, Capt. H. J. PRUETT, San Francisco.

To Rochester, Minn., Mayo Clinic, for instruction, and on completion *to Camp Pike, Ark.*, base hospital, for instruction, from Fort Riley, Capt. R. SMART, Coronado.

Canal Zone

To Camp Jackson, S. C., base hospital, from Camp Beauregard, Major W. M. JAMES, Ancon.

To Camp Shelby, Miss., base hospital, for instruction, Lieut. L. M. DRENNAN, Ancon City.

Colorado

To Camp Sherman, Ohio, base hospital, for instruction, Lieut. G. L. SHARP, Colorado Springs.

Connecticut

To Camp Hancock, Ga., base hospital, from Fort Oglethorpe, Lieut. P. H. ROGERS, New Haven.

District of Columbia

To Camp McClellan, Ala., from Washington, Lieut.-Col. A. W. SCHOENLEBER.

To Camp Meade, Md., from Walter Reed General Hospital, Capt. W. J. MANNING, Washington.

To Camp Shelby, Miss., from Washington, Lieut.-Col. J. T. AYDELOTTE.

To Camp Sherman, Ohio, base hospital, for instruction, from Fort Oglethorpe, Lieut. J. B. G. CUSTIS, Washington.

To Fort Oglethorpe for instruction, Lieut. W. N. LIPSCOMB, Washington.

To Fort Sam Houston, Texas, as department surgeon, Col. W. H. WILSON.

To Hoboken, N. J., from the Surgeon-General's Office, Major-Gen. R. E. NOBLE, Lieut.-Cols. J. S. COULTER, W. L. HART.

To Walter Reed General Hospital, D. C., from Fort Oglethorpe, Lieut. D. B. MOFFETT, Washington.

Florida

To Rockefeller Institute for instruction in the treatment of infected wounds, and on completion *to Camp Sherman, Ohio,* base hospital, for instruction, from Fort Oglethorpe, Capt. E. S. ESTES, St. Augustine.

Georgia

To Fort Des Moines, Iowa, base hospital, *for instruction,* from Fort Oglethorpe, Capt. W. L. COOKE, Columbus.

To Fort Oglethorpe for instruction, Lieuts. T. STARR, Calhoun; J. R. McMICHAEL, Quitman.

To Fort Sam Houston, Texas, base hospital, for instruction, from Fort Oglethorpe, Capt. J. D. MAGNET, Atlanta.

To French Lick, Ind., from Camp Wheeler, Lieut.-Col. R. W. BLISS.

To Hampton, Va., Langley Field, Lieuts. J. P. KENNEDY, Atlanta; W. H. WHITTENDALE, Norman Park.

To report to the commanding general, Southern *Department,* Lieut. T. M. VORBRINCK, Savannah.

The following order has been revoked: *To Camp Wheeler, Ga.*, from Fort Oglethorpe, Lieut. T. M. STEWART, Atlanta.

Illinois

To Camp Abraham Eustis, Va., from Camp Jessup, Lieut. L. B. CLINTON, Chicago.

To Camp Crane, Pa., from Camp Pike, Capt. A. H. CURTIS, Chicago. Mobile hospital, from *Fort Oglethorpe,* Lieut. E. J. BURKE, LaSalle.

To Camp Custer, Mich., base hospital, Lieut. D. HOLDEN, Chicago.

To Camp Grant, Ill., base hospital, *for instruction,* Lieut. M. B. KARATZ, Chicago.

To Camp Greene, N. C., to examine the command for cardiovascular diseases, from Edgewood, Md., Lieut. A. SUMMERS, Oak Forest.

To Camp Hancock, Ga., base hospital, from Camp Logan, Capt. H. A. WARE, Chicago; from Fort Oglethorpe, Capts. R. L. TRUITT, Naperville; W. E. POTTER, Oak Park; Lieuts. J. R. SMITH, Chicago; J. A. BOZARTH, East St. Louis.

To Camp Jackson, S. C., base hospital, Capt. W. H. BUHLIG, Chicago.

To Camp Joseph E. Johnston, Fla., base hospital, from Fort Oglethorpe, Capt. W. R. FRINGER, Rockford.

To Camp Logan, Texas, base hospital, for instruction, from Fort Oglethorpe, Capt. L. P. KUHN; Lieut. H. HOFMAN, Chicago.

To Camp MacArthur, Texas, base hospital, for instruction, from Fort Oglethorpe, Capt. J. E. STANTON, Chicago.

To Camp Meade, Md., evacuation hospital, from Fort Oglethorpe, Capt. C. B. RIPLEY, Galesburg.

To Camp Pike, Ark., base hospital, from Camp Beauregard, Capt. C. W. COMPTON, Springfield.

To Camp Shelby, Miss., base hospital, for instruction, from Fort Oglethorpe, Capt. W. A. PLICE, Chicago.

To Camp Sheridan, Ala., from Camp Forrest, Major T. P. FOLEY, Chicago.

To Camp Sherman, Ohio, base hospital, for instruction, Lieuts. J. W. KELLY, Chicago; E. A. WELDEN, Wheaton.

To Camp Zachary Taylor, Ky., base hospital, for instruction, Capt. R. T. VAUGHAN, Chicago; from Fort Riley, Lieut. P. S. CLARK, Chicago.

To Columbus Barracks, Ohio, from Camp Meade, Lieut. A. C. PRUNER, Chicago.

To Dansville, N. Y., from Fort Oglethorpe, Capt. A. ALGUIRE, Belvidere.

To Fort Des Moines, Iowa, from Fort Oglethorpe, Lieut. J. MITCHELL, Chicago. Base hospital, for instruction, Lieut. G. W. COX, Litchfield.

To Hoboken, N. J., Lieut. J. H. CAMPBELL, Collison. Base hospital, from Camp Hancock, Lieut. A. J. WEIRICK, Marseilles; from Camp McClellan, Lieut. J. A. DE FREITAS, Springfield.

To Kiser, Va., from Camp Meade, Capt. H. WOOD, Batchtown.

To Rockefeller Institute for instruction in the treatment of infected wounds, and on completion *to Camp Lee, Va.*, base hospital, for instruction, Fort Oglethorpe, Capt. H. D. HULL, Crystal Lake. On completion *to Camp Meade, Md.*, base hospital, for instruction, Lieuts. P. E. GREENLEAF, Bloomington; O. L. EDWARDS, Roodhouse.

To Waynesville, N. C., from New Haven, Capt. W. H. WATTERSON, Chicago.

The following orders have been revoked: *To Camp Crane, Pa.*, evacuation hospital, Lieut. C. F. HARRIS, Chicago. *To Camp Joseph E. Johnston, Fla.*, from Fort Oglethorpe, Capt. S. ROSENBLATT, Chicago.

Indiana

To Boston, Mass., Harvard Graduate School of Medicine, for instruction, from Fort Oglethorpe, Lieut. R. S. KEMP, Kentland.

To Camp Crane, Pa., evacuation hospital, from Fort Oglethorpe, Lieut. C. R. BASSLER, Elkhart.

To Camp Grant, Ill., base hospital, for instruction, Major D. C. PEYTON, Jefferson.

To Camp Meade, Md., from Fort Oglethorpe, Capt. H. N. SWEZEY, Lafayette. Base hospital, from Fort Oglethorpe, Lieut. E. L. SCHAIBLE, Gary.

To Camp Upton, N. Y., from Fort Oglethorpe, Lieut. A. R. KERR, Attica.

To Fort Oglethorpe, as instructor, from Fort Benjamin Harrison, Capt. F. M. WHISLER, Wabash. For instruction, from Ann Arbor, Capt. C. C. FUNK, New Albany.

To Hampton, Va., Langley Field, Capt. A. W. WARMAN, Clinton.

To New York, Bellevue Hospital, for instruction, from Fort Oglethorpe, Capt. B. W. CHIDLAW, Hammond.

To Pittsburgh, Pa., from Camp Sevier, Capt. W. E. GEORGE, Indianapolis.

To Rockefeller Institute for instruction in the treatment of infected wounds, and on completion *to Camp A. A. Humphreys, Va.*, base hospital, for instruction, from Fort Oglethorpe, Capt. F. R. CLAPP, South Bend. On completion *to Camp Lee, Va.*, base hospital, for instruction, C. H. McCULLY, Logansport.

To Walter Reed General Hospital, D. C., Lieut H. L. BELL, Knox.

The following order has been revoked: *To Fort Oglethorpe*, base hospital, from Camp Dodge, Lieut. E. N. BENNETT, Kokomo.

Iowa

To Camp Crane, Pa., mobile hospital, from Camp Jackson, Major P. B. McLAUGHLIN, Sioux City.

To Camp Greene, N. C., base hospital, from Southern Department, Capt. E. M. P. SWARD, Glenwood.

To Camp Hancock, Ga., base hospital, from Fort Oglethorpe, Capt. J. C. MURPHY, Davenport.

To Camp Upton, N. Y., base hospital, from Fort Oglethorpe, Lieut. W. H. JOHNSTON, Muscatine.

To Lansing, Mich., Michigan Agriculture College, Lieut. H. L. BRIDGMAN, Columbia.

To Fort Oglethorpe, base hospital, from Camp Wheeler, Lieut. H. L. VON LACKUM, Iowa City. For instruction, Lieut. J. O. MURPHY, Eldon.

To Garden City, N. Y., from Fort Sill, Major T. L. LONG, Woodward.

To Rochester, Minn., Mayo Clinic, for instruction, and on completion *to Camp Grant, Ill.*, base hospital, for instruction, from Fort Riley, Lieut. F. P. WINKLER, Sibley. On completion *to Camp Zachary Taylor, Ky.*, base hospital, for instruction, from Fort Riley, Capt. W. RUML, Cedar Rapids.

To Washington, D. C., St. Elizabeth's Hospital, for instruction, from Camp Travis, Lieut. J. I. MARKER, Centerville.

Kansas

To Camp Crane, Pa., mobile hospital from Walter Reed General Hospital, Capt. H. WILKINSON, Kansas City.

To Camp Zachary Taylor, Ky., base hospital, from Fort Oglethorpe, Capt. W. H. CARTER, Wichita.

To Fort Oglethorpe, evacuation hospital, from Fort Riley, Capt. H. ATKINS, Pratt. For instruction, from Fort Riley, Lieut. W. S. PROUT, Concordia.

To Fort Riley for instruction, Lieut. J. E. GRAF, Salina.

To Rochester, Minn., Mayo Clinic, for instruction, and on completion *to Camp Dodge, Iowa*, base hospital, for instruction, from Fort Riley, Lieut. R. B. EARP, Eldorado.

To Rockefeller Institute for instruction in the treatment of infected wounds, and on completion *to Camp Sherman, Ohio*, base hospital, for instruction, from Fort Oglethorpe, Lieut. A. E. GARDNER, Wichita.

Kentucky

To Hoboken, N. J., Lieut. P. T. SKAGGS, Louisville.

Louisiana

To Camp Crane, Pa., from Fort Oglethorpe, Capt. W. B. CHAMBERLIN, Baton Rouge. From the Surgeon-General's Office, Major S. M. D. CLARK, New Orleans.

To Camp Greene, N. C., base hospital, from Fort Oglethorpe, Capt. E. HOLLOWAY, Plaquimine.

To Fort McPherson, Ga., for instruction, Lieut. C. L. GAULDEN, Elizabeth.

To Fort Oglethorpe for instruction, Lieut. O. P. DALY, Jr., Lafayette.

To New Orleans, La., Quartermaster's Department, Major F. W. FARHAM, New Orleans.

Maine

To Camp Devens, Mass., to examine the command for nervous and mental diseases, from Boston, Lieut. F. E. ROWE, Augusta.

To Camp Hancock, Ga., base hospital, from Fort Oglethorpe, Lieut. O. C. MOULTON, South Windham.

Maryland

To Camp Meade, Md., base hospital, from Camp Leach, Lieut. W. P. FINNEY, Baltimore.

To Edgewood, Md., Edgewood Arsenal, from Camp Meade, Lieut.-Col. G. E. LEWIS, Rockville.

To Rochester, Minn., Mayo Clinic, for instruction, and on completion *to his proper station*, from Fort Riley, Capt. W. B. PERRY, Baltimore.

Massachusetts

To Boston, Mass., Parker Hill, Lieut. L. M. SPEAR, Boston.

To Brockton, Mass., and on completion *to Camp Devens, Mass.*, from Fort Oglethorpe, Capts. J. F. CALLAHAN, J. J. McNAMARA, Lieut. J. L. MARA, Brockton.

To C[illegible], base hospital, from Fort Bliss, Lieut. A. N. [illegible]

To C[illegible] New York, Lieut. L. S. KEMP, Canton; from Richmond, Capt. G. L. TOBEY, Boston. Mobile hospital, from Fort Oglethorpe, Capt. W. E. HUNT, Malden; from Williamsbridge, Lieut. H. J. LUPIEN, Brockton.

To Camp Devens, Mass., base hospital, from Camp Cody, Lieut. W. H. MERRILL, Lawrence; from Fort Oglethorpe, Capt. H. H. FITZSIMMONS, Boston. Base hospital, for instruction, Lieut. D. S. ADAMS, Boston.

To Camp Dix, N. J., base hospital, from Lakewood, Capt. J. A. CECONI, Boston.

To Camp Gordon, Ga., base hospital, from Camp Hancock, Lieut. F. W. HODGDON, Jr., Boston.

To Camp Greene, N. C., base hospital, from Camp Gordon, Capt. G. A. PIERCE, Tewksbury.

To Camp Hancock, Ga., base hospital, from Fort Oglethorpe, Lieuts. H. E. DIEHL, Quincy; G. L. STEELE, West Springfield.

To Camp Zachary Taylor, Ky., base hospital, from Fort Oglethorpe, Lieuts. C. F. WILCOX, Jr., East Boston; C. G. YERBURY, Springfield.

To Minneapolis, Minn., University of Minnesota, from Rantoul, Capt. J. G. JENNINGS, Boston.

To New York, Cornell Medical College, for instruction, Capt. C. WHELAN, Hingham.

Michigan

To Camp Crane, Pa., mobile hospital, from Fort Oglethorpe, Lieut. A. C. HALL, Detroit.

To Camp Greene, N. C., base hospital, from Boston, Capt. H. W. LONG, Escanaba.

To Camp Hancock, Ga., base hospital, from Fort Oglethorpe, Capt. G. P. MYERS, Detroit.

To Camp Lee, Va., base hospital, from Camp A. A. Humphreys, Capt. C. L. BARBER, Lansing.

Minnesota

To Boston, Mass., Harvard Graduate School of Medicine, for instruction, from Fort Oglethorpe, Lieut. E. O. SWANSON, St. Paul; from Fort Riley, Lieut. F. H. NEHER, St. Paul.

To Camp Crane, Pa., mobile hospital, from Camp Wadsworth, Lieut. S. O. BLACK, Rochester.

To Camp Dodge, Iowa, base hospital, from Fort Riley, Capt. W. W. LEWIS, St. Paul. Base hospital, for instruction, Capt. A. H. PARKS, Minneapolis.

To Camp Grant, Ill., base hospital, for instruction, Capt. C. I. OLIVER, Graceville.

To C[illegible] base hospital, from Fort Oglethorpe, Lieut. G. I[illegible]ea.

T[illegible], to examine the command for nervous and mental diseases, from San Francisco, Lieut. A. F. STRICKLER, Sleepy Eye.

To Camp Zachary Taylor, Ky., base hospital, from Fort Oglethorpe, Capt. C. A. LESTER, Winona.

To Fort McPherson, Ga., for instruction, Capt. A. W. SHALEEN, Hallock.

To Fort Oglethorpe for instruction, Lieuts. C. M. CLARK, P. A. O'LEARY, Rochester.

To Mineola, N. Y., Hazelhurst Field, from St. Paul, Capt. A. S. FLEMING, Minneapolis.

Mississippi

To Camp Greene, N. C., base hospital, from Fort Oglethorpe, Capt. J. B. STONE, Belen.

To Camp Pike, Ark., evacuation hospital, from Fort Oglethorpe, Capt. G. G. ASH, Lexington.

To Camp Sheridan, Ala., Lieut. G. W. BOUNDS, Mechan Junction.

To Camp Sherman, Ohio, base hospital, from Fort Oglethorpe, Lieut. D. C. MONTGOMERY, Greenville.

To Fort Oglethorpe for instruction, Lieut. T. R. McCARLEY, Okolona.

Missouri

To Camp Crane, Pa., mobile hospital, from Fort Oglethorpe, Lieut. O. F. FLADER, St. Louis.

To Camp Greene, N. C., base hospital, from Fort Oglethorpe, Capt. C. S. CAPELL, Kansas City.

To Camp McClellan, Ala., base hospital, for instruction, Lieut. R. W. JANSON, St. Louis.

To Camp Zachary Taylor, Ky., base hospital, from Fort Oglethorpe, Capt. W. M. WHEELER, Sedalia; from Jefferson Barracks, Lieut. J. C. DONAHUE, St. Louis.

To Fort Benjamin Harrison, base hospital, from Camp Dodge, Capt. D. E. SINGLETON, Clarence.

To Fort Leavenworth, Kan., Lieut. B. R. TREASURE, McFall.

To Fort McPherson, Ga., for instruction, Capt. C. D. CANTRELL, Kansas City.

To Fort Oglethorpe, evacuation hospital, from Camp MacArthur, Capt. S. S. BURNS, St. Louis; from Camp Shelby, Lieut. A. L. HERTEL, St. Louis. For instruction, Capt. P. I. LEONARD, St. Joseph; from Boston, Lieut. A. M. GOLDMAN, Kansas City.

To Fort Riley for instruction, Lieut. D. L. ROBESON, Kansas City.

To examine the command for nervous and mental diseases, from Central Department, Capt. S. D. REYNOLDS, Gouler.

To Fort Sam Houston, Texas, base hospital, for instruction, from Fort Oglethorpe, Lieut. A. M. GREGG, Joplin.

To Fort Sheridan, Ill., base hospital, from Camp MacArthur, Major J. C. MORFIT, St. Louis.

To Jefferson Barracks, Mo., from St. Louis, Major H. W. LOEB, St. Louis.

To Pittsburgh, Pa., from Camp Lewis, Lieut. H. A. CALVERT, Smithville.

To Rochester, Minn., Mayo Clinic, for instruction, and on completion *to Camp Dodge, Iowa*, base hospital, for instruction, from Fort Riley, Capt. P. S. TATE, Farmington.

To Rockefeller Institute for instruction in the treatment of infected wounds, and on completion *to Camp Devens, Mass.*, base hospital, for instruction, from Fort Oglethorpe, Lieut. C. S. STRATTON, Roscoe.

Montana

To Camp Crane, Pa., base hospital, from Camp Lewis, Capt. E. F. DODDS, Missoula. Evacuation hospital, from Camp Fremont, Lieut. W. G. PALM, Joplin.

To Rockefeller Institute for instruction in the treatment of infected wounds, and on completion *to Camp Dix, N. J.*, base hospital, for instruction, from Fort Oglethorpe, Capt. O. T. STRATTON, Cascade.

Nebraska

To Camp Dodge, Iowa, base hospital, Lieut. B. M. KULLY, Omaha.

To Fort Des Moines, Iowa, from Fort Crook, Major E. L. DELANNEY, Omaha.

To Fort Oglethorpe for instruction, Lieut. O. R. PLATT, Hebron.

To Fort Riley, base hospital, from Fort Oglethorpe, Capt. J. J. SNIPES, Lincoln.

To Hoboken, N. J., base hospital, from Camp Zachary Taylor, Capt. C. H. CAMPBELL, Columbus.

To Rochester, Minn., Mayo Clinic, for instruction, and on completion *to Camp Grant, Ill.*, base hospital, for instruction, from Fort Riley, Capt. C. L. FAHNESTOCK, McCook.

To Rockefeller Institute for instruction in the treatment of infected wounds, and on completion *to Camp Greene, N. C.*, from Fort Oglethorpe, Capt. W. T. CARSON, Hastings.

Nevada

To Camp Crane, Pa., evacuation hospital, from Camp Kearney, Capt. E. K. SMITH, Lovelock.

New Hampshire

To Camp Devens, Mass., from Fort Oglethorpe, Lieut. G. A. TREDICK, Portsmouth.

To Rockefeller Institute for instruction in the treatment of infected wounds, and on completion *to Camp Devens, Mass.*, base hospital, for instruction, from Fort Oglethorpe, Lieut. E. H. THOMPSON, Hampton.

To Walter Reed General Hospital, D. C., from Fort Oglethorpe, Lieut. F. B. CLOW, Wolfeboro.

New Jersey

To Camp Abraham Eustis, Va., to examine the command for nervous and mental diseases, from Washington, Lieut. E. H. SNAVELY, Cedar Grove.

To Camp Greene, N. C., base hospital, from Camp Jackson, Major C. E. SUTPHEN, Newark; from Fort Oglethorpe, Lieut. M. E. STREEN, Newark.

To Camp Hancock, Ga., base hospital, from Fort Oglethorpe, Capt. C. R. NEARE, East Orange; Lieut. R. D. VREELAND, Passaic.

To Fort Oglethorpe, base hospital, from Camp Jackson, Lieut. I. S. INGBER, Secaucus.

New York

To Army Medical School for instruction, from Hoboken, Lieut. T. M. CALLADINE, Perry.

To Camp Cody, N. M., for instruction, from Fort Slocum, Major R. E. PARRISH.

To Camp Crane, Pa., base hospital, from Camp Lewis, Capt. R. M. JONES, New York. Mobile hospital, from Fort Oglethorpe, Lieut. A. B. BRUNER, R. V. FUNSTEN, New York.

To Camp Devens, Mass., base hospital, for instruction, Lieut. H. HARRIS, New York.

To Camp Hancock, Ga., base hospital, from Camp Jackson, Capt. J. H. EVANS, Virgil; from Fort Oglethorpe, Lieuts. C. A. LEE, Brooklyn; E. W. PRESLEY, Staten Island. Base hospital, for instruction, Lieut. N. H. GOLDBERG, New York.

To Camp Jackson, S. C., base hospital, Lieut. M. GLEICH, New York.

To Camp Lee, Va., base hospital, Lieut. J. RYBACK, Brooklyn.

To Camp Logan, Texas, from Fort Oglethorpe, Lieut. O. J. COOK, New York.

To Camp MacArthur, Texas, base hospital, for instruction, from Fort Oglethorpe, Lieut. I. E. SUMNER, Brooklyn.

To Camp McClellan, Ala., base hospital, for instruction, from Fort Oglethorpe, Lieut. E. W. WILKINS, Albany.

To Camp Meade, Md., from Syracuse, Capt. D. E. BRACE, New York. Base hospital, for instruction, Lieut. D. M. FULLER, New York. Evacuation hospital, from Camp Laurel, Lieut. D. G. DUDLEY, Endicott; from Fort Oglethorpe, Lieut. C. L. LARKIN, New York.

To Camp Wheeler, Ga., from Washington, Major H. R. GAYLORD, Buffalo.

To Camp Zachary Taylor, Ky., base hospital, from Camp Greene, Capt. J. R. SWANICK, Saratoga Springs.

To Chanute Field, Rantoul, Ill., as flight surgeon, from Hazelhurst Field, Capt. W. A. SCRUTON, New York.

To Fort Benjamin Harrison, from Southern Department, Capt. A. C. CALISCH, Oswego.

To Fort Oglethorpe, from Knoxville, Tenn., Lieut. L. JACOBS, Brooklyn. Base hospital, from Camp Wheeler, Lieut. R. G. BLOOD, New York. For instruction, Lieuts. J. BECKENSTEIN, Brooklyn; I. GREENBERG, J. G. J. GRIMLEY, New York.

To Hoboken, N. J., from Fort Porter, Capt. A. J. CAPRON, Oswego; from Washington, Lieut. T. J. VOSBURGH, Warwick. Base hospital, from Camp McClellan, Lieut. S. S. ARLUCK, New York.

To Lakewood, N. J., Lieuts. L. T. MANN, New York.; P. J. WHITE, Jr., Staten Island; from New Haven, Capt. C. W. FIELD, New York.

To New York, Neurological Institute, for instruction, Lieut. J. RESNIK, New York.

To Otisville, N. J., from Fort McPherson, Capt. R. E. PLUNKETT, Whitehall.

To Pittsburgh, Pa., Lieut. A. VALENSI, New York.

To Rahway, N. J., from Boston, Lieut. H. F. MORRISON, Tuxedo Park.

To Rochester, Minn., Mayo Clinic, for instruction, and on completion *to Camp Sherman, Ohio*, base hospital, for instruction, from Fort Riley, Lieut. F. A. SHARPE, New York.

To Rockefeller Institute for instruction in the treatment of infected wounds, and on completion *to Camp Meade, Md.*, base hospital, for instruction, from Fort Oglethorpe, Lieut. J. L. KINNER, Elmira.

To Walter Reed General Hospital, D. C., from Fort Oglethorpe, Lieut. H. L. PRINCE, Rochester.

To Washington, D. C., from Camp MacArthur, Major J. T. SPRAGUE, Staten Island; from Walter Reed General Hospital, Lieut. H. P. SAWYER, Troy.

To West Point, N. Y., to give orthopedic instruction, and on completion *to Fort Hancock, N J.*, from Plattsburg Barracks, Major B. H. WHITBECK, New York.

To Williamsbridge, N. Y., from Camp Sheridan, Capt. S. W. ROOF, New York.

The following order has been revoked: *To Fort Oglethorpe* for instruction, Lieut. A. WINKELSTEIN, Syracuse.

North Carolina

To Camp Sherman, Ohio, from Fort Oglethorpe, Lieut. R. B. WILKINS, Raeford.

To Lakewood, N. J., Lieut. D. H. NISBET, Charlotte.

North Dakota

To Camp Lewis, Wash., for instruction, from Camp Dodge, Capt. A. M. FISHER, Bismark.

Ohio

To Austin, Texas, State University, from Fort Sill, Lieut. F. S. VAN DYKE, Columbus.

To Camp A. A. Humphreys, Va., from New Haven, Lieut. A. J. FOX, Cincinnati.

To Camp Abraham Eustis, Va., for instruction, from Columbus Barracks, Major L. J REGAN

To Camp Crane, Pa., mobile hospital, from Fort Oglethorpe, Capt. E. W. FISHER, Portage; Lieut. F. F. DAVIS, East Liverpool.

To Camp Custer, Mich., as camp surgeon, from Camp Pike, Lieut.-Col. E. F. McCAMPBELL, Columbus.

To Camp Greene, N. C., base hospital, from Camp Shelby, Lieut. C. V. DAVIS, Cleveland.

To Camp Hancock, Ga., base hospital, from Camp Bowie, Capt. H. M. OSBORNE, Youngstown; from Fort Oglethorpe, Lieut. T. HULICK, Cincinnati.

To Camp Jackson, S. C., base hospital, for instruction, from Fort Oglethorpe, Lieut. J. K. HAMILTON, Youngstown.

To Camp McClellan, Ala., base hospital, for instruction, Lieut. H. A. BAUGHN, Washington C. H.

To Camp Sherman, Ohio, from Army Medical School, Lieut. V. R. TURNER, Newark. Base hospital, from Fort Oglethorpe, Lieut. P. M. SPURNEY, Cleveland. Base hospital, for instruction, Lieut. O. G. GRADY, Orrville.

To Camp Zachary Taylor, Ky., base hospital, for instruction, Lieut. F. J. GALLAGHER, Cleveland.

To Fort Oglethorpe, base hospital, from Army Medical School, Major R. D. MADDOX, Cincinnati.

To Hampton, Va., Langley Field, Lieut. J. W. CAINES, Cuyahoga Falls.

To Hoboken, N. J., Lieut. F. H. MIKETTA, Cincinnati.

To Marshall, Texas, Bishop and Wiley College, Lieut. J. R. FINLEY, Dayton.

To Philadelphia, Pa., Spring Garden Institute, from Camp Meade, Lieut. C. B. TANNER, Columbus.

To Springfield, Mo., Drury College, from Madison, Wis., Lieut. B. J. SAWICKI, Cleveland.

Oklahoma

To Camp Beauregard, La., base hospital, for instruction, Capt. J. M. ALFORD, Oklahoma City.

Pennsylvania

To Biltmore, N. C., from Lakewood, Major J. B. McCREARY, Shippensburg.

To Camp Crane, Pa., mobile hospital, from Fort Oglethorpe, Capt. E. V. KYLE, Christiana.

To Camp Greene, N. C., base hospital, from Camp Wadsworth, Lieut. J. P. HARLEY, Williamsport; from Fort Oglethorpe, Major T. B. CARROLL, Pittsburgh; Lieuts. G. W. CONRAD, Johnstown; A. S. SICKMAN, Lock. Base hospital, for instruction, Lieut. J. M. HIGGINS, Sayre.

To Camp Hancock, Ga., base hospital, from Fort Oglethorpe, Capt. J. A. BROOKE, Philadelphia. Evacuation hospital, from Fort Oglethorpe, Lieut. C. J. McCULLOUGH, Washington.

To Camp Jackson, S. C., base hospital, for instruction, from Fort Oglethorpe, Lieut. J. D. KEIPER, Johnstown.

To Camp Joseph E. Johnston, Fla., base hospital, for instruction, from Fort Oglethorpe, Lieut. K. A. BOWMAN, Johnstown.

To Camp Kearney, Calif., from Southern Department, Major W. H. THOMAS, Philadelphia.

To Camp Lee, Va., base hospital, Lieut. J. C. KNOX, Washington. Base hospital, for instruction, Lieut. O. R. CLOVIS, Jollytown.

To Camp Meade, Md., from Fort Oglethorpe, Lieut. E. P. KITCHEN, Philadelphia. Base hospital, for instruction, Lieut. C. E. CHASE, Doylestown. Evacuation hospital, from Fort Oglethorpe, Major J. S. RODMAN, Philadelphia.

To Camp Shelby, Miss., base hospital, for instruction, Lieut. S. G. BIDDLE, Philadelphia; from Fort Oglethorpe, Lieut. M. PLATT, Philadelphia.

To Camp Sheridan, Ala., base hospital, for instruction, Lieut. P. C. EISEMAN, Latrobe.

To Camp Sherman, Ohio, base hospital, for instruction, from Fort Oglethorpe, Capt. W. L. CAMPBELL, New Castle.

To Camp Zachary Taylor, Ky., base hospital, Major W. PEPPER, Philadelphia; from Camp Gordon, Capt. H. B. CORNELL, Scranton; from Fort Oglethorpe, Lieut. R. J. A[illegible]

To Detroit, Mich., Capt. R. W. W[illegible]

To Fort Oglethorpe, evacuation ho[illegible] Capt. A. R. MATHENY, Pittsburgh; from Walter Reed General Hospital, Capt. R. BRENNEMAN, Pittsburgh.

To Fort Riley, base hospital, from Boston, Capt. W. M. HOLTZ, Pittsburgh.

To Fort Slocum, N. Y., as orthopedic surgeon, from Boston, Lieut. C. N. SILMAN, Pittsburgh.

To Hoboken, N. J., base hospital, from Fort Oglethorpe, Lieut. C. T. FARIES, Narbeth.

To Newport News, Va., from Camp Sevier, Capt. M. J. SHIELDS, Scranton.

To Rockefeller Institute for instruction in the treatment of infected wounds, and on completion *to Camp Lee, Va.*, base hospital, for instruction, from Fort Oglethorpe, Capt. L. VAN HORN, Philadelphia. On completion *to Camp Wadsworth, S. C.*, base hospital, for instruction, from Fort Oglethorpe, Capt. J. M. GELWIX, Chambersburg.

Rhode Island

To Camp Zachary Taylor, Ky., base hospital, from Fort Oglethorpe, Capt. A. B. BRADSHAW, Providence.

To *New Haven, Conn.*, Yale Army Laboratory School, for instruction, from Hoboken, Major J. HAMILTON, Jr., Providence.

South Carolina

To Camp Crane, Pa., mobile hospital, from Fort Oglethorpe, Capt. H. W. DeSAUSSURE, Charleston.

To Camp Greene, N. C., base hospital, for instruction, Lieut. B. H. BAGGOTT, Columbia.

To Camp Hancock, Ga., base hospital, from Fort Oglethorpe, Lieut. D. H. SMITH, Glenn Springs.

To Fort Oglethorpe, evacuation hospital, from Fort Riley, Lieut. C. B. MILLS, Cross Hill.

To Ithaca, N. Y., Cornell University, from Everman, Texas, Lieut. J. L. BLAIR, Sharon.

To San Antonio, Texas, Kelly Field, as flight surgeon, from Mineola, Major C. W. KOLLOCK, Charleston.

To Williamsbridge, N. Y., for observation and treatment, from Fort Riley, Lieut. E. W. RICHIE, Abbeville.

South Dakota

To Camp Crane, Pa., mobile hospital, from Fort Oglethorpe, Capt. W. D. FARRELL, Aberdeen.

To Fort Oglethorpe for instruction, Lieut. M. C. JOHNSTON, Aberdeen.

Tennessee

To Camp Shelby, Miss., base hospital, for instruction, Lieut. H. D. MILLER, Johnson City.

To Hoboken, N. J., from the Surgeon-General's Office, Lieut.-Col. W. D. HAGGARD, Nashville.

To Lakewood, N. J., Major M. HAASE, Memphis.

Texas

To Camp A. A. Humphreys, Va., base hospital, for instruction, from Fort Oglethorpe, Capt. W. P. CONNALLY, McGregor

To Camp Beauregard, La., from Camp Zachary Taylor, Capt. J. P. GIBBS, Houston. *Base hospital*, from Camp Greene, Capt. R. T. MORRIS, Houston.

To Camp Crane, Pa., from Camp Greene, Capt. C. C. GREEN, Houston. Mobile hospital, from Fort Oglethorpe, Lieut. W. C. WEDEMEYER, Galveston; from Fort Sam Houston, Lieut. E. J. BURNS, Carrizo Spring.

To Camp Gordon, Ga., base hospital, for instruction, from Fort Oglethorpe, Capt. D. A. MANN, Beaumont.

To Camp Greene, N. C., base hospital, from Fort Oglethorpe, Lieut. F. J. STANISLAV, Waco.

To Camp Hancock, Ga., base hospital, from Camp MacArthur, Capt. H. R. DUDGEON, Waco; from Fort Oglethorpe, Capt. F. A. PIERCE, Dallas. Base hospital, for instruction, from Fort Oglethorpe, Lieut. W. L. ASKEW, *Amarillo*.

To Camp Lee, Va., base hospital, for instruction, from Richmond, Lieut. W. L. JACKSON, Dallas.

To Camp MacArthur, Texas, base hospital, for instruction, Major W. M. WOLF, San Antonio.

To Camp McClellan, Ala., base hospital, for instruction, from Fort Oglethorpe, Capt. I. A. WITHERS, Fort Worth.

To Camp Sevier, S. C., base hospital, from Fort Oglethorpe, Lieut. M. M. LANDRUM, Lampasas.

To Camp Shelby, Miss., from Camp Zachary Taylor, Lieut. H. E. BAYLIS, Huntsville.

To Camp Travis, Texas, Lieut. V. M. LONGMIRE, Temple.

To Fort Oglethorpe, base hospital, from Fort Bliss, Lieut. E. TOOMIN, Waco. Evacuation hospital, from Camp Dodge, Lieut. E. C. BRANNON, Waco; *from* Camp Travis, Capt. M. J. DUNCAN, Dallas. For instruction, Lieut. G. A. PAGENSTECHER, San Antonio. *To Fort Riley* for instruction, Lieut. W. L. PARKER, Temple.

To Walter Reed General Hospital, D. C., for observation and treatment, from Fort Sam Houston, Lieut. R. L. AIGUIER, Dallas.

Virginia

To Camp Abraham Eustis, Va., from Syracuse, Major A. C. COUMBE, Vienna.

To Camp Crane, Pa., from Southern Department, Capt. J. M. LOVE, Norfolk.

To Camp Devens, Mass., from Camp Forrest, Capt. H. J. HAGAN, Roanoke.

To Camp Hancock, Ga., base hospital, from Fort Oglethorpe, Capt. C. T. PIERCE, Litwalton; Lieuts. J. W. TURMAN, Richmond; W. S. SLICER, Roanoke.

To Camp Lee, Va., base hospital, for instruction, Lieut. H. D. HOWE, Hampton.

To Camp Sevier, S. C., base hospital, for *instruction*, Lieut. C. E. PEERY, Burke's Garden.

To Camp Zachary Taylor; Ky., base hospital, from Fort Oglethorpe, Lieut. B. O. WIRE, Hurley.

To Hoboken, N. J., Capt. R. R. HOSKINS, Mathews.

To Rockefeller Institute for instruction in the treatment of infected wounds, and [illegible] *to Camp Devens, Mass.*, base hospital, for instruction, [illegible] t. J. W. DEVINE, Lynchburg. On [illegible] *Taylor, Ky.*, base hospital, for instruct[illegible] Capt. W. F. HARTMAN, Swoope.

The following order has been revoked: *To Rockefeller Institute* for Instruction, Lieut. H. W. BLANTON, Richmond.

Washington

To Camp Crane, Pa., from Camp Lewis, Capt. C. R. McCREERY, Tacoma.

To Camp Custer, Mich., base hospital, for instruction, Capt. J. C. HENDERSON, Seattle.

West Virginia

To Camp Gordon, Ga., base hospital, for instruction, Capt. W. S. FULTON, Wheeling.

To Camp Greene, N. C., base hospital, from *Fort Oglethorpe, Lieut.* C. H. TRIPPETT, Buckhannon.

To Camp Zachary Taylor, Ky., base hospital, from Fort Oglethorpe, Capt. W. W. ORR, Worthington.

To Pittsburgh, Pa., University of Pennsylvania and Carnegie Institute, Lieut. T. E. ROMINE, Charleston.

Wisconsin

To Camp Hancock, Ga., base hospital, from Fort Oglethorpe, Capt. W. S. DARLING, Milwaukee; Lieut. C. W. LOCKHART, Mellen.

To Fort Oglethorpe, evacuation hospital, from Camp Joseph E. Johnston, Capt. V. F. MARSHALL, Appleton.

To Rahway, N. J., from Boston, Lieut. H. E. BUNDY, Milwaukee.

To Rochester, Minn., Mayo Clinic, for instruction, and on completion *to Fort Des Moines, Iowa*, for instruction, from Fort Riley, Lieut. J. M. ROSS, Bloom City.

ORDERS TO OFFICERS OF THE UNITED STATES PUBLIC HEALTH SERVICE

Surg. B. W. BROWN, directed to attend conventions of social service council of Canada at various places and also local city conventions in the State of Washington, to deliver addresses on venereal disease control.

Surg. L. P. H. BAHRENBERG, proceed to Jefferson City, Mo., for conference with state authorities on venereal disease control.

Surg. G. W. McCOY, proceed to Boston, Mass., and other places deemed advisable for laboratory studies relative to the etiology of influenza and other infectious diseases.

P. A. Surg. W. L. TREADWAY, proceed to Trenton, N. J., and assume charge in connection with state and local authorities of the control of the influenza epidemic.

Asst. Surg. P. M. STEWART, *proceed to Boston*, Mass., to duty in connection with the control of the spread of influenza.

Asst. Surg. R. R. SAYERS, proceed to Boston, Mass., for duty *in* connection with the control *of the spread* of influenza.

Asst. Surg. R. L. DeSAUSSURE, proceed to Boston, Mass., for duty in connection with the *control* of the spread of influenza.

Asst. Surg. H. S. MUSTARD, assume charge of service operations in the District of *Columbia* in order to properly safeguard the health of the military forces and the government *employees*.

Asst. Surg. C. E. GIBBS, proceed *to* Washington, *D*. C., for duty in measures for the control of influenza.

Pharmacist F. J. HERTY, proceed to Boston, Mass., for duty *in* connection with *the control* of the *epidemic* of influenza.

A. A. Surg. PERCY AHRONS, relieved *at Atlanta*, Ga., proceed to Raleigh, N. C., for duty in extra-*cantonment sanitation*.

A. A. Surg. EDWARD B. HELFRICH, proceed to Newport News, Va., for duty in extracantonment *sanitation*.

A. A. Surg. J. M. BIED[illegible] Va., and assume charge of the sanitary wor[illegible] plant.

A. A. Surg. EUGENE [illegible]vport News, Va., for duty in extracantonment sanitation.

A. A. Surg. JAMES W. RICHARDS, proceed to Wilmington, Del., for duty in venereal disease control *measures*.

A. A. *Surg*. B. F. *ROBERTS*, relieved at Newport News, Va., *pro*ceed to Washington, D. C., for *duty in* measures for the control *of influenza*.

A. A. Surg. A. L. SMEDLEY, proceed *to* Alexandria, Va., for duty *in* extracantonment sanitation.

Asst. Educational Director DAVID ROBINSON, proceed to necessary points in the states of New York, Ohio, *Illinois*, Minnesota, *Iowa*, Nebraska, Wyoming, and Colorado for conference relative *to* the instructions to drafted *men* to be carried out under service *super*vision.

Scientific Asst. W. H. PRICE, *relieved* at Anniston, Ala., proceed *to* Augusta, Ga., to assume charge of service operations.

Scientific Asst. SAMUEL SAUNDERS, relieved at Brunswick, Ga., proceed to Washington, D. C., for duty in measures *for the* control of influenza.

Asst. Epidemiologist C. C. APPLEWHITE, relieved at Englewood, N. J., proceed to Atlanta, Ga., and assume charge of service operations.

Asst. San. Engineer J. G. FOSTER, relieved at Gulfport, Miss., proceed to Fayetteville, N. C., for duty in extracantonment sanitation.

San. Inspector HARRY S. LUCAS, proceed to Washington, D. C., for duty in measures for the control of influenza.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST; SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION, PUBLIC HEALTH, ETC.)

ALABAMA

Tribute to Former Surgeon-General Gorgas and Major-General Noble.—In a discussion in the House of Representatives, Oct. 2, 1918, on a bill to provide an additional building for the United States Public Health Service, Representative Bankhead paid the following tribute to Surgeon-General Gorgas:

> And, in this connection, Mr. Chairman, it just occurred to me that in a very few weeks, on account of reaching the age limit, the great Surgeon-General of the United States, Gen. William C. Gorgas, will be retired from his present position. I want to say that the people of my native State of Alabama took a great pride in the achievements of that great medical man. His usefulness not only reflects itself in the gratitude of the people of Alabama, but the people of the United States and of foreign countries are under everlasting obligations to that man, whose genius and skill have accomplished so much in the conservation of human life.
>
> As was suggested a few moments ago, he made it possible by the sanitation that he perfected in the Panama Canal Zone to make that great interoceanic canal a reality, and inasmuch as it is largely conceded it was a dream of that great old Alabaman, Senator John T. Morgan, to construct that canal, in just as large measure General Gorgas played a part in the fruition of that enterprise. I feel sure that the Government itself, that the Members of Congress and those who are familiar with his service, will regret the retirement from his present official position of Gen. William C. Gorgas, Surgeon-General.

Following this statement Representative Burnett of Alabama paid the following tribute to General Noble:

> In addition to what my colleague from Alabama has said about General Gorgas, I desire to call the attention of the committee to the fact that there is another great Alabaman that stands perhaps second to him in rank and ability in the Surgeon-General's Office, and that is General Noble, of Anniston, Ala., who was with General Gorgas all through his wonderful career in Panama. Alabamans had hoped that when General Gorgas retired, General Noble would be promoted to the position of Surgeon-General. The press carries a report, however, that perhaps another great surgeon, who is now in France, will probably be transferred to this great work on this side, and that General Noble will be assigned to the duties now being performed by that other great surgeon, General Ireland.
>
> I desire to say that those of us who know General Noble believe that there can be no more efficient man assigned to either one of the duties. I know him; I know his family; I know his ancestry, and I believe that to whatever field of operation he may be assigned he will perform the work with the same efficiency that has accompanied every work that he has been assigned to by the Government since he has been in its service.

ARKANSAS

Influenza.—October 8, a statewide quarantine was declared against places where influenza had occurred, and all places of public assemblage were closed. Public travel was not prohibited. According to the report of Dr. J. C. Geiger, representative of the Public Health Service in the state, there had been 1,800 cases of influenza in Little Rock and vicinity, of which 65 per cent. had recovered. Thirty per cent. of the new cases were in children. The pneumonia cases were 1.7 per cent. of the total number of cases and the deaths resulting from complications amounted to 0.2 per cent. An isolation hospital was opened in Little Rock, October 9; the city was divided into districts and a nursing service provided by the Public Health Service.

CALIFORNIA

Health Center.—A health center for the examination of children under 6 years of age was opened at Santa Rosa, October 5. The center will be open daily between 10 and 12 a. m. Dr. Elizabeth M. Yates was in charge on the opening day. All children of less than 6 years will be examined free, and advice will be given as to diet, etc. It is hoped that all babies examined during Better Baby Week will be brought for reexamination so that improvement may be noted, and further advice given if necessary.

ILLINOIS

Physical Defects Removed.—Major John M. Dodson, Chicago, medical aide to Governor Lowden has perfected a plan whereby selective draft men in Class B, which is the remediable group will be able to secure treatment before being inducted into service.

Museum as War Hospital.—It is announced that the new Field Columbian Museum, Grant Park, Chicago, has been offered to the government as a war hospital, and that the offer has been accepted. The building is to be remodeled so as to accommodate 4,300 sick and wounded soldiers, and the construction of a number of buildings for the use of nurses is to be begun at once. The building is on a site 6 acres in extent.

Illegal Practitioners Fined.—G. B. Black, Norris City, White County, was arrested by the Department of Registration and Education of the State of Illinois and fined $450 for practicing medicine without a license. The fine and costs in the case amounted to $725. Black has been practicing medicine in White County for twenty years and has openly defied the authorities to prosecute him. Thomas Deschauer, 702 East Sixty-Third Street, Chicago, was also arrested by the department for practicing medicine without a license and was fined $50 and costs by the court. The department caused the arrest of Mrs. J. McPhee of Joliet, who was found practicing medicine without a license. She was fined $100 and costs.

Tuberculosis at Camp Grant.—The examination of men who have had influenza for possible tuberculous infection is now engaging the attention of Major Clarence L. Wheaton and his corps of assistants who have the matter of camp tuberculosis in their charge. Up to the beginning of the epidemic of influenza, measles had been the special matter of interest to those engaged in the tuberculosis department. Through the efforts of this department tuberculosis in the camp has been kept as low as 1 per cent., and sometimes not a case was on hand. Since the clearing house for examinations of suspects of this sort was established 800 men have been examined. Those suspected of being tuberculous have been placed in the tuberculosis ward of the base hospital for observation and treatment and until final disposition of their cases, which means that they are either returned to their homes or are sent to some government sanatorium for further treatment.

Chicago

Personal.—Dr. H. I. Davis, Chicago, left Wednesday for New York to sail at once for France for service with the American Red Cross.——Dr. James J. McGuinn, Chicago, has been appointed assistant commander of the medical zone in charge of the reconstruction of wounded soldiers in France, by the American Red Cross and has started for his new post of duty.

MARYLAND

Medical Library Closed.—It has been decided that the library of the Medical and Chirurgical Faculty of Maryland will close at 6 p. m. excepting on Fridays. This change is in order to save light and service.

Sanitary Work in Military Zones.—The state department of health has asked the Maryland Council of Defense for an appropriation of $15,000 to continue the sanitary work in military zones in Maryland. Zones have already been established at Fort Howard, Holabird, Edgewood, Aberdeen, Indian Head, and Solomons Island, Curtis Bay, Ordinance Depot, and the Camp Meade area. To supervise these zones ten inspectors will be needed in addition to the number furnished by the board of health. The department has also asked for an appropriation of $6,000 for the control of venereal disease in the state.

Personal.—Lieut.-Col. William H. Welch, Baltimore, attached to the Surgeon-General's staff at Washington, D. C., is recovering from an attack of influenza.——Lieut.-Col. Thomas R. Boggs, Baltimore, has been made chief medical consultant for the air service of the American Expeditionary Forces, attached to general headquarters.——Lieut. Walter L. Denny of Baltimore, who has been ill at Fort Oglethorpe with influenza, is reported improving.——Dr. Benjamin F. Grove, Baltimore, 60 years old, is at St. Joseph's Hospital suffering from contusions of the head and probably a fractured skull as the result of a fall.

MINNESOTA

Regulations Regarding Burial of Influenza Victims.—The state board of health has made an announcement in regard to handling the bodies and burial of victims of influenza. In the case of deaths occurring in the state, public funerals will not be permitted. In the case of bodies of soldiers returned to Minnesota, public funerals will be permitted on condition that the casket be not opened, and that any escort returning with the body may not attend such funerals or mingle with the public.

Report on Venereal Diseases.—The report of the Division on Venereal Diseases of the Minnesota State Board of Health shows that during the quarter ending September 30 the average monthly expenditure per month was about $2,700 in the administration of the venereal disease regulations. A regulation by the state board prohibiting the sale of venereal disease remedies by pharmacists was endorsed in about fifty replies to a circular letter addressed to them. There have been some violations of the regulation, and a number of druggists will be cited before the state board before prosecution in the courts. An inventory of venereal disease remedies in the stores is being taken. Clinics have been organized, one for women in Minneapolis run by the City Health Department, and a men's clinic at the university for two evenings a week which is being partially financed by the state board. An evening dispensary for men and women was arranged for in St. Paul, and a clinic for both sexes was opened, October 1, in Duluth. During the quarter there were distributed to various departments, dispensaries and institutions, 408 doses of arsenobenzol, 152 Wassermann tests were made and fifty-seven examinations for gonorrhea. Much educational work was done and literature was distributed. A system of reporting cases was inaugurated, August 1, and during that month 620 cases were reported by 137 physicians, of which there were 356 of syphilis, 249 of gonorrhea and fifteen of chancroid. In September, 438 cases were reported, 225 of syphilis, 199 of gonorrhea and fourteen of chancroid. Forty-four physicians were added to the list of those reporting. Through the social service department many sources of infection have been located and the patients placed under treatment. A total of 305 cases have been handled for the quarter. This work is being inaugurated in the towns throughout the state. The quarantine power of the board in venereal cases has been upheld in the district court in Minneapolis.

MISSOURI

Banquet to Society.—Dr. Charles R. Woodson, St. Joseph, was host at the sixth annual dinner of Buchanan County Medical Society, which was held at the Woodson Sanatorium, South Park, St. Joseph.

Tuberculosis Cottage Ready.—The new cottage erected by the health board of St. Joseph, on a site near the City Isolation Hospital, for the treatment of patients with tuberculosis has been completed and is ready for occupancy. The building is a one-story structure, 42 by 16 feet, and is divided into two large rooms for patients, a hallway and living room combined, and a bathroom and diet kitchen. The building will accommodate ten patients.

Personal.—Dr. Ellsworth H. Trowbridge, Kansas City, formerly in charge of medical inspection in the public schools, has been appointed acting assistant surgeon, U. S. P. H. S., and assigned to duty in the Kansas City district.——Dr. Milton P. Overholser, Harrisonville, who has been ill with septicemia in St. Mary's Hospital, Kansas City, is reported to be convalescent.——Dr. William J. Hunt, St. Joseph, has resigned as physician of Buchanan County to enter the military service.

NEW YORK

Infantile Paralysis.—It is reported that there are seventy-seven mild cases of infantile paralysis in the village of Alfred. None of the cases are said to be serious.——Hornell reports fourteen cases of the disease.

First District Branch Elects.—The First District Branch of the Medical Society of the State of New York held its twelfth annual meeting at Tuxedo, October 17, and elected the following officers: president, Dr. Joseph B. Hulett, Middletown; first vice president, Dr. George A. Leitner, Piermont; second vice president, Dr. Edward C. Rushmore, Tuxedo Park; secretary, Dr. Charles Ellery Denison, New York, and treasurer, Dr. John A. Card, Poughkeepsie.

New York Infirmary for Women and Children Appeals for Funds.—This institution is making renewed efforts to secure the $200,000 which is required to enable it to go on with its work. It is sixty-five years since the institution was established, and it has never before been compelled to appeal to the general public for aid. During the last year the infirmary has cared for more than 700 mothers and new-born infants, has performed 643 operations, and has treated 53,000 cases in its clinic.

Personal.—Dr. Bertis R. Wakeman, Hornell, has been appointed city health officer of Hornell, to succeed Dr. John A. Conway, Hornell, who has resigned to accept a commission in the Medical Corps.——Dr. Henry S. Stillwell, Ogdensburg, who has been ill with pneumonia, is reported to be convalescent.——Dr. Abram W. Stoutenberg, Binghamton, has been appointed physician and manager of the Boone County Tuberculosis Hospital, to succeed Dr. William A. Behan, Binghamton, who has resigned to enter the government service.

Loses License.—The board of regents of the University of the State of New York filed in the office of the clerk of Bronx County, October 2, a certificate stating that at the meeting held Sept. 19, 1918, the medical license of Dr. Edgar S. Bullis, Albany, and his registration as a practitioner was annulled. The certificate states that Dr. Bullis "was charged with and found guilty of unlawfully accepting $220, and asking for $2,880 and a diamond ring to influence his decision on a matter pending before him in his place of trust, he being at the time a captain in the United States Army, in violation of the provisions of Section 117 of the Federal Penal Code."

New York City

Clinical Meeting on Deformities.—The clinical meeting of the Hospital for Deformities and Joint Diseases was held, October 22, and Dr. Frederick Tilney discussed, "Gait and Reflexes in Cord Lesions."

Personal.—Dr. Julius Lewis Amster, former health commissioner, is suffering from blood poisoning contracted while operating a few days ago. He is reported to be out of danger.——Dr. William H. Park is seriously ill with influenza.

New Health Zone for Mothers.—A new branch of the Maternity Center Association has been opened at 412 West Forty-Seventh Street, in Health Zone No. 5, which includes that part of Manhattan between Twenty-Sixth and One Hundred and Fifth streets.

School Lunches Approved.—The plan of the board of education to provide luncheons in the public schools of the city has been approved by William Guggenheim, chairman of the Teachers' Loyalty Committee of the American Defense Society. In his letter of approval he states that "The physical health of the children is most essential for their complete mental and moral development. The custom of providing them with luncheons at the schools, therefore, will further very materially so desired an end."

Influenza Situation Serious.—The reports of the New York Health Department show that, October 19, there were 4,930 cases of influenza reported which was about 200 more than on the preceding day. It is believed that about one half the actual number of cases are being reported. While the number of cases of influenza has increased, the number of cases of pneumonia has decreased during the past few days. There has, however, been an increased number of deaths from both diseases. The hospitals of the city are sorely in need of physicians and nurses and are so overcrowded that a number of vacant residences are used for the care of victims of the epidemic. The New York Infirmary for Women and Children has turned over its building to the health department for the care of influenza patients. The Health Commissioner's Emergency Advisory Committee announces the opening of district quarters in different neighborhoods in Manhattan. Forty-two of these centers have been put in operation. This committee issued a statement, October 18, declaring that the epidemic up to that moment was under control and that there is no occasion for public alarm. They have also issued a circular of instructions. Admiral Usher, commandant of the Brooklyn Navy Yards, has issued an order forbidding Navy men to ride on the subway. An investigation by the War Department Industries Board shows that in the factories in Queens where government work is being done and where more than 25,000 persons are employed, approximately 12 per cent. of the employees were absent from work and in some of the plants the absentees ran as high as 35 per cent.

OHIO

Personal.—Dr. A. Irving Ludlow, Seoul, Chosen, Korea, formerly of the surgical staff of the Lakeside Hospital, Cleveland, has gone to Harbin, Manchuria, as a member of the American Red Cross Unit to form a hospital base for the Japanese, Czecho-Slovac forces operating along the line of the Trans-Siberian Railway.——Lieut. Daniel H. Bowman, M. C., U. S. Army, Kenton, is reported to be seriously ill at Camp Greenleaf, Ga.

District Tuberculosis Hospitals.—District tuberculosis hospitals now provide for tuberculous persons from twenty-seven counties of the state, and twenty-two other counties have taken steps to establish districts, and following that, hospitals. Preliminary steps have been taken recently by Fairfield, Licking, Coshocton, Muskingum and Perry counties to establish a hospital, making the third new district formed this year. The importance of establishing the hospitals is emphasized by the fact that already nearly 750 discharged tuberculous soldiers from Ohio have been reported to the state department of health, and of this number only twenty-seven have been admitted to sanatoriums. The number of cases among soldiers will no doubt increase as the war goes on.

PENNSYLVANIA

Tax Opposed by Physicians.—The physicians in attendance at the meeting of the Medical Society of the State of Pennsylvania are said to have gone on record as unanimously opposing a bill before Congress classing medicine as a luxury and subjecting it to a tax of 10 per cent.

Personal.—Dr. Thomas S. Blair, Harrisburg, has been appointed chief of the new Division of Control of Narcotics in the state department of health.——Dr. Aaron D. Weaver, Old Zionsville, who has been ill with influenza, is reported to be convalescent.——Dr. Conrad J. Becker, Wilkes-Barre, was run down and seriously injured by an automobile, October 1.

Ruling on License Revocation.—The attorney-general's department of the state has notified Dr. John M. Baldy, Philadelphia, chairman of the State Bureau of Medical Education and Licensure, that the bureau "has no power to revoke the license of a physician whose right to practice was obtained prior to the Act of June 3, 1911, if the offense was prior to the Act of May 24, 1912."

Influenza.—Eight Army surgeons have been sent into Dauphin County to help fight the epidemic, replacing physicians smitten with the disease, and four senior medical students have been sent to Williamstown. Members of the reserve militia are acting as orderlies in emergency hospitals at Bristol, Paoli, Nanticoke and Homestead. October 15, the Red Cross ran a truckload of drugs from Philadelphia to Pottsville. October 17, Dr. B. Franklin Royer, Harrisburg, acting commissioner of health, refused to rescind his action (closing the wholesale and retail liquor houses) or to give any date when the ban would be lifted. Richard Wood of Allan Wood Iron Company, Conshohocken, gave $5,000 for the maintenance of an emergency hospital in that town for the care of the needy influenza patients.

Philadelphia

New Dean.—Dr. Allan J. Smith has been appointed dean of the Medical Department of the University of Pennsylvania to fill the post of Dr. William Pepper.

Influenza Mortality High.—While the number of new cases of influenza has somewhat decreased, the death rate for the week ending at noon, October 19, was much higher than the previous week. The number of new cases for the week was 14,566 as compared with 20,854 for the week preceding. The death rate, however, was 4,596 as compared with 2,635. The death rate for the week from all causes reached 5,270, representing a mortality rate of 156.01 per thousand, as compared with 95.74 the week ending October 12, when Philadelphia showed the highest death rate that had ever been recorded. The total number of deaths for the three weeks during the height of the epidemic reached 10,301, of these influenza and pneumonia cases 8,578. A number of emergency hospitals have been opened. The entire main building of the Woman's Hospital at Twenty-Second Street and North College Avenue, both surgical and medical, has been turned over to caring for emergency influenza cases and all the available space has been occupied by patients. Thirty nurses have been stricken with the epidemic and two have died, but the work of caring for the suffering has not been hampered as a number of women have volunteered as nurses. One is serving as an ambulance driver in place of the regular driver who is ill. Red Cross group No. 9 has opened an emergency hospital in St. Stephen's parish house, Wissahickon. Supplies have been sent to the building from the Red Cross headquarters but the upkeep of the hospital will depend on the support of the residents of the twenty-first ward. The members of the North Philadelphia Business Men's Association rented a building at 4015 Germantown Avenue and have 100 beds. Dr. Edward H. Wiggins is the physician in charge; in South Philadelphia, where the conditions were most distressing, the South Philadelphia Republican Club at Broad Street and Snyder Avenue, was transformed into an emergency hospital capable of caring for seventy-five patients; $4,000 was contributed by the South Philadelphia business men and the patients were taken care of by a few doctors assisted by twenty fourth-year medical students. An old horse-driven ambulance was resurrected and a fireman volunteered as driver and many of the poor not only received medical attention but were supplied with food. Problems of all sorts have resulted from the epidemic: the task of feeding many families of influenza patients; of fumigating the houses where patients have died and caring for the hundreds of children left helpless by death of parents. The Division of Child Hygiene in the bureau of health is grappling with the problem of the orphaned children; the College Settlement has organized numerous squads for inspecting, cleaning and disinfecting houses, and twelve emergency food service centers have been established. The city opened an emergency hospital in the old Medico-Chirurgical Hospital and a number of physicians volunteered their services.

CANAL ZONE

Report of Health Officer on Venereal Diseases.—In his report for the quarter, April, May and June, 1918, Arthur T. McCormack, chief health officer of the Canal Zone, discusses the situation with reference to venereal diseases in the zone and offers some plans for the improvement of conditions, which he says is the greatest problem that has been presented. The matter has been the subject of conference between the health and the military authorities. Panama and Colon are within the exclusive jurisdiction of the sanitary authorities of the United States and the police jurisdiction of the Republic of Panama. Neglect of the Panama authorities to enforce any sort of regulation resulted in a great increase in venereal diseases among our soldiers and forced the commanding general of the department to issue a general order which was, in effect, a quarantine against the two cities named with reference to venereal diseases, habit forming drugs and alcohol, and to protest against the graft and incompetence which always accompany these evils. The uncertain effect of land quarantines and the undesirability of an indefinite quarantine along a boundary line between two friendly states finally resulted in the acceptance by the Panama authorities of a plan proposed by the chief health officer by which the former retained their police authority and the latter the sanitary responsibility. Prostitution is forbidden in the zone itself, prostitutes are deported, and employees contracting venereal diseases are heavily penalized, yet the chief health officer says these diseases have alternated with tuberculosis as the most common cause of hospital admission since malaria has been under control. In Panama and Colon segregated districts have existed almost since the American occupation, but there are more prostitutes outside of these districts than in them, and it is said about 90 per cent. of the patrons of the prostitutes are American soldiers, sailors and civilians. General Order No. 20, the order referred to, greatly reduced the evil, but, July 15, a decree was to become effective that every woman remaining in the segregated district, as well as the clandestines, must be examined and all those infected treated in the Santo Tomaso Hospital at the expense of the Republic of Panama. Every man applying for admission to the segregated district was to be examined by a physician, and if diseased, required to submit to treatment in or out of the hospital, at the discretion of the health officer. Ten per cent. of the men so far examined, it is said, have been found infected and treated, the indigent at the public expense. About one-third of those examined in the laboratories were found to be syphilitic, and this is said to indicate about the ratio of those infected in the population of the two cities. Under the decree house owners renting to prostitutes are fined by the health officer, and thus placing the burden of enforcement on them forces the clandestines to come to the segregated district where they are examined and treated by qualified physicians only. Druggists are forbidden to have in their possession patent medicines or other remedies for venereal diseases except such as are prescribed by physicians. Physicians are required to report all cases treated by them. The health officer suggests three plans for handling the matter: The abrogation of this decree and the issuance of a police decree enforceable in the Panama courts making all vice criminal. On account of the acceptance of illicit intercourse as a necessary evil by the Panamaians, such a decree would be even more negligible as a factor in disease prevention than it is in the United States. A second plan would be to increase the personnel of the health department by twelve physicians, four of whom should be gynecologists, and three inspectors, together with an appropriation of about $2,000 per month to Santo Tomaso Hospital to increase the force of nurses and orderlies. This, it is said, would cost between $50,000 and $75,000 a year, but would rapidly decrease venereal diseases. The third plan, and the one which the health officer at present thinks would be least satisfactory, would be to allow the old conditions to return, only increasing the personnel of the health departments of the two cities, and depending on the education of the public to hasten the elimination of these diseases. This it is said would take many years, whereas only months would be required by a more radical plan, such as the second plan outlined. The health officer fears, however, that the third plan will have to be adopted unless the money is forthcoming speedily to carry out the more radical plan.

CANADA

Hospital Opened.—The formal opening exercises of the Laval Hospital of Quebec were held at St. Foy, October 13.

Hospital News.—Fifteen municipalities throughout Alberta are taking advantage of the rural hospital legislation, and the largest hospital yet arranged for is to be at Wainwright. Vermillion, Mannville and Lacombe are also getting their organizations under way.——Soldiers discharged on account of tuberculosis are to have increased provision for their care in the western provinces, and a new sanatorium is to be erected at Bowness. Accommodation is to be arranged for from 300 to 400 patients.——Winnipeg is to erect a smallpox hospital on the grounds of the King Edward and King George hospitals.

Society Meetings.—At the annual meeting of the College of Physicians and Surgeons of the Province of Quebec, held recently in Quebec, the following officers were elected: president, Dr. Rudolphe Boulet, Montreal; vice presidents, Drs. Albert Laurendeau, St. Gabriel de Brandon; Louis Ph. Normand, Trois-Rivieres, and Arthur A. Simard, Quebec, and secretary, Dr. Joseph Gauvreau, Montreal.——At the annual meeting of the Manitoba Medical Association held in Winnipeg, recently, the following officers were elected: honorary president, Dr. Francis-X. Demers, Ste. Anne des Chenes; president, Dr. Louis S. Gendreau, St. Norbert; vice president, Dr. Fortunat LaChance, Winnipeg, and secretary-treasurer, Dr. J. Prendergast, St. Boniface.

Personal.—Major Frederick A. Cleland, Toronto, has left for the Pacific Coast where the Canadian-Siberian Force is mobilizing. He is to be medical officer to the contingent.——Capt. A. S. Hayche, R. A. M. C., has been wounded three times, and has been awarded the Military Cross.——Capt. Frank Muir Walker, M. B., R. A. M. C., received the Military Cross when Prince Arthur of Connaught recently visited Toronto.——The following officers are reported wounded: Lieut.-Col. David Donald, Victoria, B. C., C. A. M. C.; Major George S. Mothersill, D.S.O., Winnipeg, Man., C. A. M. C.; Capt. J. C. Eager, C. A. M. C., Watertown, Ont.; W J. Sobey, C. A. M. C., les Gatlos, Ont.; D. S. Campbell, C. A. M. C., Woodside, N. S.; A. E. McCusker, C. A. M. C., Regina, Sask.; F. B. Lobb, C. A. M C., St. John, N. B.——Capt. Edgar Douglas, Vancouver, B. C., has been awarded the Military Cross.——Dr. Arthur A. Simard, Quebec, has been appointed president of the Superior Council of Hygiene, to succeed the late Prof. E. P. Lachapelle.

GENERAL

Society Meeting Postponed.—The ninth annual meeting of the American Association for Study and Prevention of Infant Mortality which was to have been held at Asheville, N. C., November 11 to 14, has been postponed until further notice on account of the epidemic of influenza.

Bequests and Donations.—The following bequests and donations have recently been announced:

Lebanon, Pa., Hospital, $2,000, Eaglesville Sanatorium for Consumptives, and Jewish Hospital, Philadelphia, each $500, by the will of Solomon Asher.

College of Physicians and Surgeons, in the City of New York, $9,000 to be applied toward work in tuberculosis, from the trustees of the East River Homes Foundation; $5,000 from an anonymous donor to be used in surgical research; $1,000 each, to the funds to provide for the admission of women to the medical school, William H. Moore, Arthur Curtiss James, Elizabeth Waterbury, Forrest S. Bryden, J. M. Wallace, D. G. Reid, and F. L. Hines.

Chicago Winfield Tuberculosis Sanatorium, and Chicago Lying-In Hospital and Dispensary each $2,000, by the will of Ferdinand Silverman, Chicago.

Children's Free Hospital, Louisville, $1,500; St. Joseph Infirmary, $500, by the will of Dr. James Morrison Ray, Louisville.

Welfare Committee for Tuberculosis.—At the closing of the annual convention of the Northwest Tuberculosis Conference in Seattle, a committee was appointed to care for the welfare of victims of tuberculosis who move from state to state. This committee consists of Drs. Bolivar J. Lloyd, Seattle; Albert E. Stuht, Spokane; Mrs. Bethesda Beals Buchanan, Seattle; Major Ralph C. Matson, Camp Lewis, Portland, Ore.; Mrs. Katherine Athey, Boise, Idaho; Judge J. F. Ailshie, Boise; Frank Leclerc, Salt Lake City; Mrs. R. A. Morton, Cheyenne, Wyo., and Mrs. John Fulton, Reno, Nev.

Influenza.—For the week ending October 12, according to the report of the United States Census Bureau, statements received from forty-six cities showed that there were 6,122 deaths from influenza and pneumonia. Philadelphia led with 1,697; New York had 979; Boston, 850; Chicago, 571, and Washington, 387. Only forty deaths were reported from St. Louis and thirty-seven from Minneapolis. Of pneumonia cases there were 1,642 in New York, 938 in Philadelphia, 476 in Chicago, and 101 in Washington. The total number of cases since September 13 was, on October 12, 262,186. A report from Washington, October 15, showed improvement in the influenza situation in the army camps and the peak of the epidemic, it was hoped, had been passed. This is probably also true with reference to the civilian population of the cities of the eastern part of the country. The disease is now prevalent in every state in the Union. In Washington, D. C., the War Department and other departments have directed that no new employees be brought to the city during the epidemic. Congress has passed a bill establishing a reserve corps in the Public Health Service. If this is signed by the President, it is expected to assist in promoting the work of the Service in handling the influenza epidemic. Charge is being taken by the Public Health Service of the situation in all the large centers. A million dollars has been voted by Congress to the service to aid in carrying out measures against the disease. In Philadelphia the director of Health and Charities, Dr. Wilmer Krusen, has suggested the zoning system in employing physicians to treat influenza. This means that each patient will call a physician nearest to him in his district. October 13, the Louisiana State Board of Health estimated that there were 250,000 cases in the state. New cases reported on that date were 594. In Virginia it was estimated, October 16, that there were 200,000 cases in the state; in Connecticut, 110,000; in California 6,500 cases had been reported to October 14. October 16, new cases among the troops in camp numbered 5,680, against 6,498 the day before. Pneumonia cases were 1,895 as compared with 1,916 for the previous day. The deaths were 710, a decrease of 179. Improvement in the situation was noted in Vermont and New Jersey and in parts of Tennessee. At Davenport, Iowa, the Manufacturers' Association met with the Red Cross and arranged to equip an emergency hospital with from twenty-five to fifty beds with graduate and volunteer nurses in attendance. Ohio reported October 21, that there had been 100,000 cases in the state to that date. The state authorities were cooperating with the Public Health Service and volunteer physicians and nurses are being provided where needed. A quarter of a million circulars and leaflets on influenza have been distributed. Improvement is reported from some cities where the situation had been serious. October 22, based on reports for the previous forty-eight hours, in Chicago it was thought that the epidemic had decreased to the extent of 30 or 40 per cent. and that the peak of the epidemic had been passed, but efforts were not relaxed and everything was kept closed. For the period of forty-eight hours there were 2,700 new cases, 680 of which were of pneumonia.

FOREIGN

Italian Military Hospital at Grenoble.—The *Policlinico* states that the most important sanitary formation for the Italian troops in France has just been equipped by private gifts with a radiologic cabinet.

In Honor of Golgi.—As Prof. C. Golgi of the chair of general pathology at the University of Pavia is retiring this year on account of having reached the age limit, a committee has been formed to do him honor. It has been decided that the testimonial should take the form of a scholarship in the medical department of the University of Pavia, to be awarded preferably to the orphans of physicians, and in particular to victims of the present war. The committee includes representatives of the medical department, and the local and provincial medical organizations. Subscriptions are received by the treasurer of the Ordine dei medici della provincia di Pavia.

SOUTH AND CENTRAL AMERICA, MEXICO AND WEST INDIES

Deaths on a Liner.—October 7, the Spanish liner, *Alfonso XII*, arrived at a Cuban port reporting twenty-four deaths during the voyage from a malady not diagnosed, but which it is thought must be influenza. It is said that two persons among the 1,200 passengers, crazed by suffering, committed suicide. Sixty persons were ill on the arrival of the ship, forty of whom were in a serious condition.

Personal.—Dr. F. M. Fernandez, editor of the *Cronica Medico-Quirurgica* of Havana, was recently awarded the Cañongo prize by the Academia de Ciencias Medicas, Fisicas y Naturales for his work on the etiology and treatment of strabismus.——Dr. B. Saenz has been appointed to the chair of dermatology at the University of Havana after competitive examination, and Dr. M. Dominguez has been appointed chief of the National Laboratory.

MEXICO LETTER

Mexico City, Oct. 9, 1918.

Free Dispensary for Venereal Diseases

The Sociedad de Profilaxia de las Enfermedades Venereas has opened in Tacuba St., No. 78, a free evening dispensary to care for the poor with venereal disease. The work is to be done by several of the medical members of the society. Besides treating the gonorrheal and syphilitic, they will instruct in the indispensable ideas of sexual hygiene and in the evil consequences of trusting treatment to charlatans and of attempts at self treatment with the so-called specifics. A group of philanthropic persons contributed the funds to organize this dispensary, a total of 1,000 pesos, and others have offered to pay a monthly quota for its support. The society intends to give the treatments entirely free of charge with the possible exception of injections of arsphenamin and neoarsphenamin—especially the first mentioned—the price of which at present is almost prohibitive.

New Laboratory

When the public health service was reorganized last year into the Departmento de Salubridad Publica, the bacteriologic laboratory, which was one of the features of the old Consejo de Salubridad, was suppressed. This laboratory was due to the initiative of Dr. E. Liceaga, at that time president of the Consejo de Salubridad and it aided in the diagnosis of typhoid fever, malaria, diphtheria and tuberculosis, besides its other work, all free of charge to the public. As the effects of the lack of such an institution are being felt, it is now proposed to reopen it, and henceforth the laboratory will make pathologic, bacteriologic and chemical analyses as before and in addition the Wassermann fixation test. The directors of the laboratory are to be Drs. Amerena and Garduño Soto.

"Allied Notes"

As at present there are no papers published in English in Mexico City, the *Universal*, the daily with the largest circulation in Mexico, which has always been friendly to the Allies, has commenced to publish a section entitled "Allied Notes" or "Comments," in which items of interest for the members of the North American and British colonies here are published in English, and the philanthropic and welfare work which they are doing is recorded. Lately the ladies of these colonies have been making clothing for Belgian and French orphans whose fathers have sacrificed their lives on the altars of progress and human civilization.

The French colonies are not mentioned in these "Notes," as they already have a daily and biweekly, published in French. Until 1915, the *Mexican Herald* was published here by Señor P. Hudson.

Typhus in Uruapan

It has been reported that the city of Uruapan, in the state just west of the capital, is being scourged with *tabardillo*. The federal sanitary authorities have taken the necessary steps to stamp out the disease.

Antirabies Institutes

The public health authorities are contemplating the establishment of several antirabies institutes throughout the country as the one in the capital is unable to care for all who require treatment, especially in remote districts not connected by railroad with the capital. In such cases it is extremely difficult for persons who have been bitten by a rabid animal to get treatment in time, especially the indigent. During August, ninety-one persons were given treatment at the institute here. Since then the brains from several rabid animals have been sent to Toluca to initiate the inoculation treatment in that neighboring city.

Medical Service in the Emergency Stations

Measures have recently been taken to improve the medical and surgical service in the Comisarias de Policia where the victims of accidents or crimes are tended and registered, and to which the indigent apply who are seeking admission to the public hospitals. Until now these services have been inadequate for the needs of the populace.

Delegates to Child Welfare Congress

The second Congreso Americano del Niño is to be held at Montevideo in December, and Señor A. Nervo, diplomatist and author, and the Mexican consul at Montevideo have been appointed to represent the Republic of Mexico at that meeting. They are to present the articles prepared by Mexican physicians. It was previously rumored that Dr. E. Aragon, the professor of legal medicine here, was to have been the official delegate.

Influenza

News has been received that influenza is prevailing in epidemic form in the states of Coahuila, Nuevo Leon and Tamaulipas, bordering on Texas, and it is feared that railroad communication between Mexico and the United States may be impeded by the sanitary police measures that may have to be taken to isolate the epidemic focus.

New Professor of Chemistry

The pharmacist, M. de M. y Campos has been appointed to the chair of chemistry in the pharmacy department of the University here after competitive examination of three candidates.

Academy of Medicine

The Academia Nacional de Medicina resumed its sessions October 2, after the regular vacation. Dr. R. E. Cicero, of the dermatology section, now presides at the meetings, and Dr. D. Lopez is the secretary. Dr. E. Montaño, of the ophthalmology section, was elected vice president and Dr. M. E. Soberon second secretary.

LONDON LETTER

London, Sept. 17, 1918.

The Shortage of Medicinal Oils and Fats

A committee appointed by the Home Office on the outbreak of war to deal with economy in the use of drugs has issued a memorandum to the medical profession on measures necessary to meet shortage or discontinuance of the supply of lard, olive oil and castor oil for medicinal purposes. The prior claims, partly of food supply and partly of munition production, have for some months compelled restriction or even discontinuance of these substances for medicinal purposes. At present lard can no longer be released for medicinal use. The amount of olive oil and of the possible substitutes, sesame and arachis oils, that can be released is uncertain. Little if any of the quality of castor oil hitherto required for conformity with the pharmacopeial standard can be used. To obviate the difficulties that might have arisen through the fact that these substances are ingredients of many official preparations, the General Medical Council, after consultation with the Home Office Committee, directed, in an alteration and amendment of the British Pharmacopeia, 1914, that certain preparations be withdrawn from the British Pharmacopeia until further notice, while in the case of other preparations containing oils and fats, the use of various substitutes was sanctioned. By these alterations, considerable latitude was accorded in the dispensing of prescriptions that contained the official preparations affected. It appeared desirable, therefore, that some understanding should be established between prescribers and dispensers that should obviate uncertainty, and it seemed that this would best be effected by the suggestion of alternative preparations of definite formulas. The Pharmaceutical Society, acting in cooperation with a body of representative manufacturers and the Home Office Committee, undertook the necessary experiments, and has now constructed a set of war emergency formulas. The following suggestions are offered for the assistance of physicians in prescribing:

Lard can no longer be dispensed either as such or as an ingredient of a prescription. A base consisting of 5 per cent. wool fat, 10 per cent. hard paraffin [paraffin] and 85 per cent. soft paraffin [petrolatum] is on the market, and will, it is believed, afford a suitable substitute for most cases in which lard would previously have been ordered. For some cases the physician may find it advisable to modify the proportions of the ingredients named. Ointments formerly containing lard or lard and suet are now allowed to be prepared with wool fat or paraffin or mixtures of these in place of the lard or lard and suet, which may no longer be used. The base described above (named for convenience adeps factitius) has been found to afford a satisfactory substitute in the preparation of these ointments, and war emergency formulas containing it have been constructed.

For olive oil, sesame oil or arachis oil may be substituted, but none of these vegetable oils should be ordered avoidably. When required for external purposes a specially prepared mineral oil derived from petroleum (known as paraffinum liquidum flavum) is now obtainable, and will in most cases be found to afford a satisfactory substitute.

Four liniments containing olive oil have ceased to be official. War emergency formulas, containing the specially prepared mineral oil mentioned above, have been devised Liniments so prepared are on the market and may be substituted for the former official preparations.

For castor oil it has been found that the neutralized seconds castor oil, now recognized by the pharmacopeia and readily obtainable, affords a satisfactory substitute for the first quality oil hitherto used. One preparation containing castor oil has been withdrawn, namely, liquor cresol saponatus. For the preparations containing castor oil remaining official, collodium flexile, linimentum sinapis, and liquor epispasticus, the neutralized second oil will be used.

The Sinking of the Llandovery Castle

The results of an inquiry by the Minister of Overseas Military Forces in Canada Sir Edward Kemp, into the sinking of the hospital ship *Llandovery Castle*, June 27, are published in the August number of the *Bulletin* of the Canadian Army Medical Corps. Two facts stand out—the devotion and sacrifice of the medical personnel and the ship's company, and the dastardliness of the outrage. "Deliberate in its conception, every circumstance reveals the German in the light of the cunning murderer who employs every foul means of destroying all traces of his crime. No other explanation can be attached to the systematic attempts of the submarine to ram, shell and sink the lifeboats and wreckage floating helplessly with their 258 victims 116 miles from land—a work of destruction so successfully performed that only one boat containing twenty-four survivors escaped." The ship had been in service for the Canadian government as a hospital ship since March, 1918, and made four voyages to Halifax. She was on her return voyage carrying the crew and hospital establishment, but no patients nor any passengers. The statement of the submarine commander that she carried American flying officers or munitions is simply the usual convenient fiction of the Hun. There were no grounds whatever for mistaking her for anything else than a hospital ship. Except one medical officer, a sergeant and four privates, all the medical personnel were lost, including the commanding officer, Lieutenant-Colonel Macdonald of Nova Scotia.

PARIS LETTER

Paris, Sept. 19, 1918.

Health Conditions in France

The Conseil supérieur d'hygiène, at its last session, considered reports furnished by the director of the Assistance et Hygiène publiques au ministère de l'intérieur, and the representatives of the office of the Service de Santé militaire and of the Service de Santé de la marine on health conditions in France. The *Conseil* verified the statements that while there are many small foci of grip in various parts of the country, as is also the case in Algiers, in the colonies, and in most foreign countries, and although, owing to the severe heat, dysentery has made its appearance anew in French territory, yet there has not been a single case of typhus, plague or cholera.

Heated Air in the Treatment of War Wounds

Drs. Belot and Dechambre reported to the Société médico-chirurgical de la XIII-e Région the good results which they have obtained from the treatment of war wounds with a jet of hot air. The temperature of the air varied between 60 and 80 C., with a pressure of 4 or 5 kilograms. It is well to combine this treatment with massage of the surrounding and subjacent tissues. The heated air dries the wound, the odor disappears, and dead tissue is thrown off. The surface becomes rosy in hue, small granulations form, and epidermization takes place, extending from the periphery toward the center. The duration of the treatment varies from one to three months. About 600 cases which have resisted the usual methods of treatment have been treated by Belot and Dechambre in the manner described, with only 5 or 6 per cent. of failures, generally restricted to cases associated with severe trophic lesions.

Treatment of Ulcers

Several surgeons have had good results from the treatment of wounds with balsam of Peru, which is a good deodorizer, antiseptic and keratoplastic. Dr. Morlet uses the balsam especially in the treatment of ulcers. In order to lessen the discharge of pus from the wound and to prevent its stagnation in the wound, he mixes bismuth subnitrate with the balsam, making an absorbent paste of the mixture when it has dried. In this manner a sort of embalming dressing is obtained, which is semi-occlusive and yet at the same time permits the pus to escape from the wound, and then acts as a drier. The mixture contains 15 to 20 gm. of balsam of Peru; the same amount of bismuth subnitrate; 50 gm. of *colle de poisson* (gelatin); 50 gm. of glycerin and 100 gm. of water. The *colle de poisson* should be used in preference to any other gelatin, which may be infected with tetanus bacillus spores. The wound is cleaned with alcohol and the paste is applied by means of strips of tarletan which have been impregnated with the heated paste. They are then placed over the wound in the same manner as is a silicate bandage. This dressing is left in place for from twelve to fifteen days. According to the size of the wound, one or two dressings only are necessary, rarely a third. The patient is permitted to be up and about, thus adding mechanical action from walking to the keratoplastic and drying qualities of the paste.

Emetin and Ipecac

Since subcutaneous injections of emetin hydrochlorid have established a place for this agent in the treatment of amebic dysentery, other indications for its use have been found, notably in the treatment of hemoptysis, pulmonary congestion, etc. In this connection attention should be directed to the danger attending the use of ipecac even in infinitesimal doses, in cases in which emetin has been previously used. Drs. G. Billard and Blatin have made some interesting observations in this respect. In twelve cases of amebic dysentery of severe type, in which the emetin seemed to have exhausted its efficiency, it was thought advisable to resort to the use of ipecac, administered according to the Brazilian method. In order to determine the susceptibility of the patient to ipecac, 0.05 gm. of powdered ipecac was administered. In each instance, in a few minutes, the patient became pale, nauseated and then vomited; in four cases cardiovascular symptoms appeared, with syncope of short duration; in one instance these symptoms became alarming, an actual narcoleptic state ensuing and lasting for more than eight hours.

Marriages

Lieut. Claude Everett Brown, Assistant Surgeon, U. S. Navy, Sacramento, Calif., on duty at the U. S. Naval Transport Depot, New York City, to Dr. Alice Cornelia Scully of Springfield, Mass., September 26.

Lieut. Robert Percival Parsons, Assistant Surgeon, U. S. Navy, Chicago, on duty at Deer Island, Boston, to Miss Marion L. Murray of Allston, Boston, recently.

Lieut. Leo L. Smith, M. C., U. S. Army, Sapulpa, Okla., on duty at Camp Pike, Ark., to Miss Mabel E. Robison, at Sapulpa, August 22.

Lieut. James Leonard Reycraft, Assistant Surgeon, U. S. Navy, Cleveland, to Miss Marie Dannemiller, also of Cleveland, October 2.

Lieut. Stanley Joseph Seeger, M. C., U. S. Army, Milwaukee, to Miss Helen Brachman of Texarkana, Texas, October 8.

John Arthur Foley, Dorchester, Boston, to Miss Elizabeth Ewing of Roxbury, Boston, recently.

Deaths

Frank Fairchild Wesbrook, Vancouver, B. C.; Manitoba Medical College, Winnipeg, 1890; aged 50; a Fellow of the American Medical Association; president of the University of British Columbia, Vancouver, since 1913; died at his home, October 21. He was formerly professor of pathology and bacteriology in the University of Manitoba; professor of pathology and bacteriology in the Medical School of the University of Minnesota from 1895 to 1913, and dean of the institution from 1906 to 1913; director of laboratories of the Minnesota State Board of Health from 1896 to 1911, and member of the board from 1896 to 1900, and from 1911 to 1912; a member of the advisory board of Hygienic Laboratory, U. S. P. H. S., from 1904 to 1913; president of the American Public Health Association in 1905; president of the section on state and municipal hygiene of the International Congress of Hygiene and Demography in 1912; chairman of the provincial committee on food resources, and a member of many learned societies of the United States, Canada and Europe.

Frank Baker, Washington, D. C.; George Washington University, Washington, D. C., 1880; aged 77; a Fellow of the American Medical Association; professor of anatomy of Georgetown University since 1883; for many years lecturer on artistic anatomy at the Corcoran Art Gallery; superintendent of the National Zoological Park from 1886 to 1916; president of the Association of American Anatomists in 1897; and once vice president of the American Association for the Advancement of Science; assistant superintendent of the U. S. Life Saving Service from 1889 to 1890; editor of the *American Anthropologist* from 1891 to 1898; died at his home, about September 30.

Died in the Service
Asst. Surg. Hadley H. Teter, Lieutenant, U. S. Navy, 1891-1918
(See The Journal last week, p. 1334)

Died in the Service
in France
Lieut. Irving J. Pinkus, M. C., U. S. Army, 1891-1918

Died in the Service
in France
Lieut. Emil King, M. C., U. S. Army, 1867-1918

Frederick Carroll Heath, Indianapolis; Bowdoin Medical School, Brunswick and Portland, Me., 1884; aged 61; at one time a Fellow of the American Medical Association; secretary of the Indiana State Medical Society from 1896 to 1910, and president in 1910, and president of the Indianapolis Medical Society in 1905; eye surgeon to the Indianapolis City Hospital and Dispensary, the German Lutheran Orphan Asylum and Eleanor Hospital; professor of ophthalmology in the Indiana University Medical College since 1905; at one time assistant surgeon in the U. S. P. H. and M. H. S.; died at his home, October 16. .

Lieut. Herbert Douglas Taylor, M. C., U. S. Army, New York City; Johns Hopkins University, Baltimore, 1914; aged 29; a Fellow of the American Medical Association; for three and one-half years a member of the scientific staff of the Rockefeller Institute; an instructor in parasitology in the officers' school at that place, and in charge of the laboratory of the War Demonstration Hospital; also instructor to the surgical staff in bacteriology of wounds; an investigator of great talent and promise; died in the Rockefeller Hospital, New York, October 7, from pneumonia, following influenza.

Clarence Hamilton Gray, Philadelphia; University of Pennsylvania, Philadelphia, 1905; Hahnemann Medical College, Philadelphia, 1915; aged 35; at one time a Fellow of the American Medical Association; a member of the Medical Society of the State of Pennsylvania; chief of the staff of the Maternity Hospital and a member of the ophthalmological staff of the Hahnemann Hospital, Philadelphia; died at his home, October 6.

Herbert Marion Stowe, Chicago; Rush Medical College, 1896; aged 44; a Fellow of the American Medical Association; assistant professor of obstetrics in Northwestern University Medical School; assistant obstetrician to Provident Hospital; attending obstetrician to the Chicago Lying-In Hospital, and a member of the staffs of Cook County and Mercy hospitals; died, October 21, from appendicitis.

Asst. Surg. Bronson Ewing Summers, Lieutenant (Junior Grade), U. S. Navy, Richmond, Va.; Medical College of Virginia, Richmond, 1912; aged 28; a Fellow of the American Medical Association; at one time assistant health officer of Richmond; on duty with the United States Marine Corps at Quantico, Va.; died in the hospital of that camp, October 12, from pneumonia, following influenza.

Lieut. Nial Franklin Twigg, M. C., U. S. Army, Brockton, Mass.; Johns Hopkins University, Baltimore, 1917; aged 25; who had been connected with a base hospital at Birmingham, England, was returned to the United States about six months ago, and was assigned to duty at Fort Oglethorpe, Ga.; died in General Hospital No. 14, Fort Oglethorpe, October 10, from pneumonia, following influenza.

Lieut. Emil King, M. C., U. S. Army, Fulda, Minn.; University of Pennsylvania, Philadelphia, 1893; aged 51; a Fellow of the American Medical Association and a specialist on diseases of the ear, nose and throat; on duty with the American Expeditionary Forces in France, is reported to have been killed in action, about October 7.

Lieut. Irving Jonas Pinkus, M. C., U. S. Army, New York City; University and Bellevue Hospital Medical College, 1914; aged 27; a Fellow of the American Medical Association; is reported to have been killed in action, August 31.

John Wesley Kinard, Lancaster, Pa.; University of Maryland, Baltimore, 1882; Bellevue Hospital Medical College, 1889; aged 60; a Fellow of the American Medical Association, and once president of the Lancaster City and County Medical Society, and Lancaster Pathological Society; local physician of the Pennsylvania Railroad; died at his home, October 8, from pneumonia.

Major Clarence Fahnestock, M. C., U. S. Army, New York City; College of Physicians and Surgeons in the City of New York, 1900; aged 45; a Fellow of the American Medical Association; chief surgeon of the Three Hundred and First Infantry, at Camp Devens, Ayer, Mass., and later on duty as a line and medical officer in France; died, October 5, from pneumonia.

Capt. Warren Walker, M. C., U. S. Army, Philadelphia; University of Pennsylvania, Philadelphia, 1900; aged 39; a Fellow of the American Medical Association; surgeon to the outpatient departments of the Episcopal and Children's hospitals; was burned to death in the fire which consumed the officers' quarters at U. S. Base Hospital No. 3, Colonia, N. J., October 9.

Adolph Cohn, Philadelphia; Medico-Chirurgical College of Philadelphia, 1913; aged 26; at one time a Fellow of the American Medical Association; a member of the Medical Society of the State of Pennsylvania; surgeon to the Baldwin Locomotive Works, and draft board examiner; died at the Jefferson Hospital, October 7, from pneumonia, following influenza.

Paul Guilford, Chicago and LaGrange, Ill.; University of Pennsylvania, Philadelphia, 1891; aged 48; a Fellow of the American Medical Association; attending oculist and aurist to St. Luke's Hospital, Chicago; a well known specialist on diseases of the eye, ear, nose and throat; died at his home in LaGrange, October 20, from pneumonia, following influenza.

Lieut. Clayton A. Endicott, M. R. C., U. S. Army, Frankfort, Ind.; State College of Physicians and Surgeons, Indianapolis, 1907; aged 37; a Fellow of the American Medical Association, and secretary of the Clinton County Medical Society; secretary of the Frankfort Board of Health; died at his home, October 8, from pneumonia, following influenza.

James Christopher Wallis, Arkadelphia, Ark.; Jefferson Medical College, 1877; aged 64; a Fellow of the American Medical Association; president of the State Medical Board of the Arkansas Medical Society, and of the Arkansas Medical Society in 1915; and once president of the Clark County Medical Society; died at his home, October 10.

Lieut. Carl Calvin Culver, M. C., U. S. Army; Burlington, Kan.; University of Kansas, Lawrence and Rosedale, 1911; aged 31; a Fellow of the American Medical Association; on duty at Camp Grant, Rockford, Ill.; a specialist on diseases of the eye, ear, nose and throat; died in Camp Grant, about October 6, from pneumonia, following influenza.

Capt. Charles Emmett Varier, M. R. C., U. S. Army, South Bend, Ind.; University of Michigan, Ann Arbor, 1909; aged 34; a Fellow of the American Medical Association, and for one year president of the St. Joseph County Medical Society; under orders to preceed to Camp Zachary Taylor, Louisville; died at his home, October 9, from pneumonia.

Michael Francis Black, New York City; College of Physicians and Surgeons in the City of New York, 1904; aged 40; a member of the Medical Society of the State of New York; attending physician to the Seton Hospital, and chief surgeon to St. Vincent's Hospital, New York City; died at St. Vincent's Hospital, October 5, from pneumonia.

John Joseph Hassett, Lee, Mass.; New York University, New York City, 1887; aged 56; a Fellow of the American Medical Association, and president of the Berkshire County Medical Society; associate medical examiner of Berkshire County; a member of the school board of Lee; died at his home, October 11, from pneumonia.

Lieut. James Allen Etheridge, M. R. C., U. S. Army, Baltimore; Johns Hopkins University, Baltimore, 1916; aged 26; who had spent several months in Flanders with the Johns Hopkins Unit, and was later under treatment for injuries in a hospital in London; died in Johns Hopkins Hospital, Baltimore, October 7, from influenza.

Asst. Surg. John Clinton Bowman, Lieutenant, U. S. N. R. F., Canton, Ohio; Ohio State University, Columbus, 1918; aged 28; a Fellow of the American Medical Association; formerly a practitioner of Thornville, Ohio; died in the U. S. Naval Hospital, Philadelphia, October 2, from pneumonia, following influenza.

John Farrar Hunter, Jackson, Miss.; Tulane University, New Orleans, 1882; aged 58; a Fellow of the American Medical Association; for several years secretary and executive officer of the Mississippi State Board of Health; one of the most prominent physicians of the state; died at his home, October 5, from heart disease.

Harry Burton Stevenson, Baltimore; University of Maryland, Baltimore, 1892; aged 48; at one time a member of the Medical and Chirurgical Faculty of Maryland; president of the Baltimore County Medical Association, and health officer of Baltimore County; died in St. Agnes' Hospital, Baltimore, October 10, from influenza.

Alfred William Berr, Rockville, Conn.; Tufts College Medical School, Boston, 1916; aged 30; formerly a member of the staff of the Lawrence (Mass.) General Hospital; who had been inducted into service and was on duty at Fort Slocom, N. Y.; died in that place, October 8, from pneumonia, following influenza.

Harold R. Dwyer, Chicago, Rush Medical College, 1895; aged 49; at one time a member of the Illinois State Medical Society; an officer of the city health department for sixteen years; high physician of Illinois, United Order of Foresters; died at the Contagious Disease Hospital, Chicago, October 20, from diphtheria.

Charles R. Schoemaker, Baltimore, College of Physicians and Surgeons, Baltimore, 1891; aged 46; at one time a member of the Medical and Chirurgical Faculty of Maryland; a member of the staff of the Presbyterian Eye, Ear, Nose and Throat Hospital, Baltimore; died at his home, October 6, from influenza.

Asst. Surg. Warren A. Van Derveer, Lieutenant (Junior Grade), U. S. Navy, Philadelphia and Mount Holly, N. J.; Hahnemann Medical College, Philadelphia, 1910; aged 31; a Fellow of the American Medical Association; on duty at Portsmouth, Va.; died in the U. S. Naval Hospital in that place, October 7.

Asst. Surg. Michael James Carroll, Lieutenant (Junior Grade), U. S. Navy, Lenox, Mass.; Georgetown University, Washington, D. C., 1910; aged 36; a Fellow of the American Medical Association; on duty at the U. S. Naval Hospital, Newport, R. I.; died in that institution, September 29, from pneumonia.

Myron Allen Boor, Terre Haute, Ind.; Medical College of Indiana, Indianapolis, 1894; aged 46; at one time a Fellow of the American Medical Association; a member of the Indiana State Medical Association; surgeon to St. Anthony's Hospital for more than eighteen years; died at his home, October 9.

Lieut. Hugh Todd Ryan, M. C., U. S. Army, Schuylkill Haven, Pa.; Hahnemann Medical College, Philadelphia, 1914; aged 26; a Fellow of the American Medical Association; on duty at Fort Oglethorpe, Ga.; died in General Hospital No. 14, at that post, October 9, from pneumonia, following influenza.

Act. Asst. Surg. Edward Raymond DeBoth, U. S. P. H. S., Green Bay, Wis.; Rush Medical College, 1911; aged 32; a member of the State Medical Society of Wisconsin; who had applied for and was awaiting commission in the Army; died at his home, October 6, from pneumonia, following influenza.

Thomas Weaver, Nashville, Tenn.; University of Nashville, Tenn., 1897; aged 45; at one time a Fellow of the American Medical Association; for several years attending physician at the Tennessee Industrial School; died in St. Thomas' Hospital, Nashville, October 6, from pneumonia.

Charles Votteler Dorwarth, Philadelphia; University of Pennsylvania, Philadelphia, 1910; aged 31; a Fellow of the American Medical Association; visiting physician to the Polyclinic and Children's hospitals, Philadelphia; died at his home, October 8, from pneumonia, following influenza.

Capt. Howard Bigelow Jackson, M. C., U. S. Army, Melrose, Mass.; Harvard Medical School, 1901; aged 44; a Fellow of the American Medical Association; on duty at Fort Oglethorpe, Ga.; died in the General Hospital at that post, October 13, from pneumonia, following influenza.

Asst. Surg. Douglas Holmes Warner, Lieutenant, U. S. N. R. F., Portland, Ore.; University of Oregon, Portland, 1918; aged 27; a Fellow of the American Medical Association; died in the U. S. Naval Hospital, Bremerton, Wash., October 8, from pneumonia, following influenza.

Felix G. Cross, Cincinnati; Miami Medical College, Cincinnati, 1869; aged 76; president of the Columbia Life Insurance Company; a veteran of the Civil War and for several years surgeon at the Dayton Soldiers' Home; died at his home, October 1, from heart disease.

William Atlee Drysdale, Philadelphia; Jefferson Medical College, 1882; of national repute as a consulting engineer;

a member of the board of examiners of the International Electrical Exhibition, Philadelphia, 1904; died at his home, October 6, from a nervous breakdown.

Arnold Robert Moon, Williamsburg, Iowa; State University of Iowa, Iowa City, 1910; aged 32; a Fellow of the American Medical Association, and secretary of the Iowa County Medical Society; died at his home, October 6, from pneumonia, following influenza.

John Knight Bennett, Gloucester City, N. J.; Jefferson Medical College, 1887; aged 61; a member of the Medical Society of New Jersey; medical inspector of the board of health of Gloucester; died at his home, October 1, from pneumonia.

Robert Earl Harrington, Montville, Conn.; Baltimore Medical College, 1906; aged 34; a Fellow of the American Medical Association; died in the Backus Hospital, Norwich, Conn., September 23, from pneumonia, following influenza.

Joseph David Cohn, Corpus Christi, Texas; Johns Hopkins University, Baltimore, 1911; aged 30; a Fellow of the American Medical Association; and a specialist in genito-urinary diseases; died at his home, September 30, from pneumonia.

John Edward West Thompson, Bridgeport, Conn.; Yale University, New Haven, 1883; aged 68; United States minister to Hayti, under President Cleveland; was stabbed by a former patient at Bridgeport, October 6, and died instantly.

Frances N. Baker, Media, Pa.; Woman's Medical College of Pennsylvania, Philadelphia, 1877; aged 78; a Fellow of the American Medical Association; died in the Woman's Hospital, Philadelphia, September 29, from pneumonia.

George August Colin, Chicago; Illinois Medical College, Chicago, 1903; aged 37; a Fellow of the American Medical Association; also a druggist; died at his home, October, 10, from bronchial pneumonia, following influenza.

William J. K. Kline, Greensburg, Pa.; Long Island College Hospital, Brooklyn, 1863; aged 82; a Fellow of the American Medical Association; died in the Westmoreland (Pa.) Hospital, October 6, from pneumonia.

Hugh B. Reynolds, Escanaba, Mich.; University of Michigan, Homeopathic Medical School, Ann Arbor, 1886; aged 53; a member of the Michigan State Medical Society; died at his home, October 3, from myocarditis.

Julius Bachrach, Joliet, Ill.; Jenner Medical College, Chicago, 1912; Chicago College of Medicine and Surgery, 1912; aged 40; a Fellow of the American Medical Association; died at his home, October 7, from pneumonia.

Frederick Joseph Denning, South Boston; Harvard Medical School, 1908; aged 33; a Fellow of the American Medical Association; died in the Boston City Hospital, September 17, from pneumonia, following influenza.

Clarence Ayers Turner, Middle Point, Ohio; Cleveland-Pulte Medical College, Cleveland, 1913; aged 31; a member of the Ohio State Medical Association; died at his home, October 4, from bronchial pneumonia.

Joseph Franklin Miller, Stroudsburg, Pa.; Medico-Chirurgical College of Philadelphia, 1906; aged 35; a member of the Medical Society of the State of Pennsylvania; died at his home, September 29, from pneumonia.

Jasper N. Clark, Columbus, Ohio; Starling Medical College, Columbus, 1872; aged 74; for thirty-five years a practitioner of Fayette County, Ohio; died at his home, September 29, from cerebral hemorrhage.

Gustavus P. Folks, Waycross, Ga.; Louisville (Ky.) Medical College, 1889; aged 60; at one time a member of the Medical Association of Georgia; died at his home, September 23, from nephritis.

Talcott Ormsbee, Stanley Station, Ore.; American Eclectic Medical College, Cincinnati, 1876; aged 83; died in St. Vincent's Hospital, Portland, Ore., September 11, from shock, following prostatectomy.

Lieut. Morris Finkelberg, M. C., U. S. Army, Spring Valley, Ill.; Loyola University, Chicago, 1908; aged 31; a Fellow of the American Medical Association; was killed in action in France, September 15.

George Wilds Linn, Malvern, Pa.; University of Pennsylvania, Philadelphia, 1872; aged 74; a Fellow of the American Medical Association; a veteran of the Civil War; died at his home, September 26.

Silas Baldwin, Baltimore; University of Maryland, Baltimore, 1867; aged 71; for more than twenty-five years coroner of northwest Baltimore; died at his home, October 2, from cerebral hemorrhage.

A. U. Gressett, Chunkey, Miss. (license, Mississippi); surgeon in the Confederate service during the Civil War; a practitioner for 57 years; died at his home, September 21, from senile debility.

Irving Harry Kaufman, Brooklyn; University and Bellevue Hospital Medical College, 1912; aged 31; adjunct visiting gynecologist to Zion Hospital; died at his home, October 1, from pneumonia.

Louis H. Geiger, Gilman, Ill.; University of Illinois, Chicago, 1903; aged 45; a member of the Illinois State Medical Society; died at St. Luke's Hospital, Chicago, October 9, from diabetes.

David Borger, Hamilton, Ohio; Eclectic Medical Institute, Cincinnati, 1876; aged 75; was found dead from cerebral hemorrhage in a cornfield in his farm, near Hamilton, September 30.

Robert C. Mitchell, Belvidere, Ill.; Chicago Homeopathic Medical College, 1901; aged 49; a Fellow of the American Medical Association; died at his home, October 7, from pneumonia.

William Robert Cluness, Alameda, Calif.; Queens University, Kingston, Ont., 1859; aged 82; at one time a Fellow of the American Medical Association; died at his home, September 26.

Harry William Priem, Chicago; Rush Medical College, 1914; aged 30; a Fellow of the American Medical Association; died at his home, October 9, from pneumonia, following influenza.

Jane Darling Stevenson, Akron, Ohio; University of Michigan, Ann Arbor, 1918; aged 25; an intern in the Philadelphia General Hospital; died in Philadelphia, October 6, from influenza.

John J. Laurans, New Orleans; Tulane University, New Orleans, 1886; aged 56; a Fellow of the American Medical Association; died at his home, September 21, from angina pectoris.

Ray Howard Rice, Delavan, Wis.; Bennett Medical College, Chicago, 1898; aged 44; a Fellow of the American Medical Association; died at his home, October 2, from pneumonia.

William Reginald Chipman, Chelsea, Boston; Harvard Medical School, 1876; aged 69; a member of the Massachusetts Medical Society; died at his home, October 7, from heart disease.

Lieut. Joseph Charles Monnier, M. C., U. S. Army, Cleveland; Western Reserve University, Cleveland, 1917; aged 28; died in Washington, D. C., October 2, from pneumonia.

Lucy Wadsworth Tuck, Boston (license, Massachusetts, years of practice, 1894); aged 90; died at the Home for Aged Women, Roxbury, Boston, September 19.

George W. Farrow, Kansas City, Mo.; Rush Medical College, 1875; aged 76; a Fellow of the American Medical Association; died at his home, September 14.

Morris Weinberg, Philadelphia; University of the South, Sewanee, Tenn., 1904; aged 37; died at his home, October 1, from pneumonia, following influenza.

Florence B. Power, Burlingame, Calif.; Willamette University, Salem, Ore., 1893; aged 50; died in San Francisco, September 29, from carcinoma uteri.

John E. Allder, Cane Hill, Mo.; Kentucky School of Medicine, Louisville, 1876; aged 75; a veteran of the Civil War; died suddenly, September 26.

Horace N. Marvin, Dover, Del.; formerly of Sioux City, Iowa; Hahnemann Medical College, Chicago, 1883; aged 73; died at his home, September 29.

Carl Clifton Stevens, Iron Mountain, Mich.; University of Michigan, Ann Arbor, 1903; aged 37; died at his home, September 30, from pneumonia.

Isaac H. Hague, Shreve, Ohio; University of Wooster, Cleveland, 1868; aged 77; a veteran of the Civil War; died at his home, September 28.

William S. Pitts, New York City; Rush Medical College, 1868; aged 88; died at the home of his son in New York City, about September 26.

William John Truitt, Naperville, Ill.; Hahnemann Medical College. Chicago, 1889; aged 51; died at his home, October 2, from pneumonia.

James F. Doyle, Santa Ana, Calif.; University of Illinois, Chicago, 1886; aged 60; died at his home, October 1.

The Propaganda for Reform

IN THIS DEPARTMENT APPEAR REPORTS OF THE COUNCIL ON PHARMACY AND CHEMISTRY AND OF THE ASSOCIATION LABORATORY, TOGETHER WITH OTHER MATTER TENDING TO AID INTELLIGENT PRESCRIBING AND TO OPPOSE MEDICAL FRAUD ON THE PUBLIC AND ON THE PROFESSION

SULPHERB

"Sulpherb" or "Sulpherb Tablets" is another of the multifarious nostrums sold by the Blackburn Products Company of Dayton, Ohio. In common with their class, they are advertised by the "fake prescription" method, a scheme which gives the reader the impression that the advertisement is really a newspaper "health department." The individual used by the Blackburn concern to carry out this deceit is Lewis Baker, whose activities in this connection we have previously noted. The advertisements appear under the general title, "The Doctor's Advice, by Dr. Lewis Baker." Here are samples of the method by which the public is deceived:

> "*L. W. writes:* 'My blood is in bad condition. I suffer with constipation and my tongue is always coated. My skin is dark and I have pimples. I feel tired all the time, but I am too nervous to sleep. Please prescribe.'
>
> "ANSWER: Get a tube of three-grain sulpherb tablets (not sulphur) and take according to directions. They will clean your blood, aid digestion, and relieve constipation. When you get your blood pure, the other symptoms disappear."
>
> "*George asks:* 'For several months I have not been feeling well. My skin is sallow, my tongue coated, have headache, am sleepless, nervous and bothered with chronic constipation. Please help me.'
>
> "ANSWER: You need a laxative blood cleansing treatment in the form of three-grain sulpherb tablets (not sulphur). Overcome the tendency to constipation and gradually your good health and pure blood will return."
>
> "*Orrie writes:* 'I have been taking salts to purify my blood and cure my skin of itching and pimples, but don't get much benefit. Please prescribe for this.'
>
> "ANSWER: I advise three grain sulpherb tablets (not sulphur tablets), composed of sulphur, cream of tartar and vegetable extracts that remove constipation and purify the system. Take this treatment for several months for best results."

The package in which "Sulpherb Tablets" comes bears on the label one of those noninformative, alleged formulas that the shrewd "patent medicine" faker so delights in. No quantities are given, but the public is told that the tablets "contain the extracts or concentrations of Cascara, Aloes, May Apple, Nux-Vomica, Black Cherry, Capsicum, Ginger, Sarsaparilla. Also Calcium Sulphide, Sulphur and Cream of Tartar."

"Sulpherb Tablets" were examined in the A. M. A. Chemical Laboratory, and the chemists report as follows:

> "Sulpherb Tablets" are sugar coated, yellow, and weigh about 7.3 grains each, coating and all. The package states that they are three grain tablets; this probably refers to the medicament only. A qualitative examination shows the presence of emodin-bearing drugs, the taste suggesting aloes. Sulphur, calcium, sulphid, traces of alkaloid, potassium, and tartrate are present. The chemical examination shows that "Sulpherb Tablets" are probably compounded from calcium sulphid, sulphur, cream of tartar, and vegetable extractives. Of the vegetable extractives claimed to be present, aloes was indicated and a trace of some alkaloid, the amount of which was too small to permit its identification. If this alkaloid is strychnin, the quantity is insignificant, certainly not more than 1/1000 of a grain to each tablet.

Here we have, then, a simple laxative tablet, consisting essentially of drugs that have been known and used for generations, both by the medical profession and by the public. It is advertised in a way that is doubly deceitful. First the public is deceived by being led to infer that "Sulpherb Tablets" are extraordinarily efficacious; then it is further deceived by the fakish "health column" and the concealment of the "patent medicine" character of the nostrums that are recommended. Newspapers that accept such advertisements commit more than an offense against the public health; they are, for a consideration, guilty of imposing on the public's confidence by leading their readers to suppose that the "Health Talk" or "Doctor's Advice" is a department of the paper, presenting unbiased information on health subjects. The whole "prescription fake" scheme is a disgraceful combination of nostrum exploitation, quackery and low-grade advertising.

Correspondence

ALKALIS IN THE TREATMENT OF INFLUENZA

To the Editor:—It is universally agreed that in perverted metabolism by bacterial invasion, it is the acidosis that is fatal.

When the system is saturated with alkalis, there is poor soil for bacterial growth. The baneful acids may be neutralized by harmless alkalis, and these seem to act almost specifically. I have uniformly employed, and always with good results, potassium citrate and sodium bicarbonate saturation by mouth, bowel and skin.

For the past three weeks, in the present influenza epidemic, I have seen an average of 100 private patients daily. There have been all degrees of frequency and severity, and in some houses as many as six patients.

As is well known in this epidemic, there has been a very high mortality in cases occurring in pregnant women. I have seen three instances of bronchopneumonia, or "lung patches," in pregnant women, two at term, with complete recovery.

Incidentally, I have made the use of the bed-pan imperative, and have absolutely refrained from administering any of the coal-tar series.

I explain to the afflicted persons that they must be patient, and that the fever, aches and pains are inevitable for a few days, and that they must be willing to forego the seductive relief afforded by acetylsalicylic acid (aspirin), acetanilid and other heart depressants. I employ cold applications and the ordinary stimulation by strychnin, aromatic spirits of ammonia, digitalis, quinin, etc. I have always withheld all depressants.

My very successful experience in this epidemic with the saturation of the system with harmless alkalis cannot be dismissed as accidental or unique. It seems to represent an important new medical fact, or one apparently forgotten or generally overlooked. It is so simple and without any possible objection that I urge its immediate trial empirically. Further investigation in laboratory and clinic may follow later.

THOMAS C. ELY, M.D., Philadelphia.

PRECAUTIONS ON THE PART OF PHYSICIANS TO AVOID INFLUENZA INFECTION

To the Editor:—I believe THE JOURNAL would do service by suggesting precaution that should be practiced by physicians and others in the sick room with influenza patients.

Large numbers of Pennsylvania's physicians are sickening, I am sure, because they are indifferent to danger and careless about protecting themselves from the spray of moisture from the mouth of the patient.

I am getting stories every day by the score of physicians examining the chests of influenza patients in the old careless fashion, leaning over the bed with the patient talking constantly and with no attempt to have the patient cover the cough or sneeze with a towel or handkerchief. The sick rate among physicians and the death rate are appalling, and I believe physicians are needlessly sacrificing themselves because of their failure to fully appreciate what they ought to do.

I have not had time to prepare an article and have only had time to glance over the series of splendid articles illustrated in THE JOURNAL.

Masks if properly used do offer a certain degree of protection apparently and yet the every-day precaution that we practice in handling the tuberculous should be practiced at all times by careful physicians.

B. FRANKLIN ROYER, M.D., Harrisburg, Pa.
Acting Commissioner, Department of Health, Pennsylvania.

TOMATO LEAVES AND DERMATITIS

To the Editor:—I notice in an article on "Dermatitis Lycopersicum Esculentum (Tomato Plant)" by Dr. E. S. Lain (The Journal, Oct. 5, 1918, p. 1114) that after a brief search he was unable to find the tomato plant mentioned as a cause of skin eruption. In Norman Walker's "Introduction to Dermatology," Edition 6, p. 109, it says, "The following are some plants and woods which have been proved to cause dermatitis . . . tomato leaves (*Lycopersicum esculatum*)."

Malcolm MacKay, M.D., Sherbrooke, Quebec.

THE V. M. S. C. AND THE SELECTIVE SERVICE

To the Editor:—Desiring information for my own guidance in making selection of physicians for appointment as examiners on Local Boards and Medical Advisory Boards, I made inquiry of the Provost Marshal-General's Office in reference to the use, if any, he had directed should be made of the Volunteer Medical Service Corps. His reply may be useful to medical aides and others, and I send it to you for publication with the sanction of General Crowder.

John M. Dodson, M.D., Chicago.

General Crowder's letter says in part:

> . . . the Provost Marshal-General has had no thought of employing the Volunteer Medical Service Corps, as an organization, for any purpose, nor has any need for its aid arisen. On the other hand, many of its members have doubtless been utilized, individually, in the physical examination of drafted men. The medical profession has given most earnest and whole-hearted support to the work of the Selective Service, and no unofficial intermediary is required between its members and the Provost Marshal-General.
>
> F. H. Crowder, Provost Marshal-General.

Queries and Minor Notes

Anonymous Communications and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted, on request.

VENTILATION ABOARD SHIP

To the Editor:—Will you kindly inform me how many cubic feet of air an hour a man on board ship should have?

F. D. German, M.D., Franklin, Mich.

Answer.—Where possible an adult should have an air supply of 3,000 cubic feet an hour, never less than 2,000. However, there are many factors affecting this point. When the air in a given space is changed oftener than three or four times an hour, the minimal air supply would be 3,000 divided by 4, or 750 cubic feet per man per hour. The subject is fully discussed in Pryor: Naval Hygiene, Philadelphia, P. Blakiston's Son & Co., price $3. Several chapters are devoted to the problems of air and ventilation aboard ship.

Paper Famine.—There was a paper famine in Europe in the seventh century. In A. D. 640 the Saracens conquered Egypt, and at the same time, by the Order of Omar, their caliph, the renowned library at Alexandria, consisting of 400,000 volumes, was burnt. The paper supply of the then world was derived from the papyrus bark, a reed which grew only in Egypt. Consequently, when the Saracens gained possession of the country the paper supply was cut off. This led to the adoption of a curious expedient. The writing on used papyrus paper was erased and the paper, which was thus made available, again brought into use. An old author has suggested that probably owing to this, many valuable contributions from classic writers, Tacitus, Livy and others, were lost to the world. But in this ancient expedient we have a hint for the present. There must be *thousands* of households lumbered with books of no value and many libraries with volumes occupying shelf space uselessly. In every household and every library these books should be "combed out," and the paper sent back to the mills. Paper is wanted; such books are not.—*Med. Press and Circular.*

Medical Education and State Boards of Registration

COMING EXAMINATIONS

Arkansas: Little Rock, Nov. 12-13. Sec., Regular Bd., Dr. T. J. Stout, Brinkley, Ark.; Sec., Eclectic Bd., Dr. C. E. Laws, 803½ Garrison Ave., Ft. Smith.

Connecticut: New Haven, Nov. 12-13. Sec., Regular Bd., Dr. C. A. Tuttle, 196 York St., New Haven; Sec., Eclectic Bd., Dr. James E. Hair, 730 State St., Bridgeport; Sec., Homeopathic Bd., Dr. E. C. M. Hall, 82 Grand Ave., New Haven.

Iowa: Des Moines, Dec. 10-12. Sec., Dr. G. H. Sumner, Capitol Bldg., Des Moines.

Louisiana: New Orleans, Dec. 2-4. Sec., Dr. E. W. Mahler, 730 Audubon Bldg., New Orleans.

Maine: Portland, Nov. 12-13. Sec., Dr. Frank W. Searle, 776 Congress St., Portland.

Maryland: Baltimore, Dec. 10. Sec., Dr. J. McP. Scott, 137 W. Washington St., Hagerstown.

Massachusetts: Boston, Nov. 12-14. Sec., Dr. Walter P. Bowers, No. 1 Beacon St., Boston.

Nebraska: Lincoln, Nov. 13. Sec., H. P. Lehnhoff, 514 First Natl. Bk. Bldg., Lincoln.

Nevada: Carson City, Nov. 4. Sec., Dr. S. L. Lee, Carson City.

Ohio: Columbus, Dec. 3-5. Sec., Dr. H. M. Platter, State House, Columbus.

Texas: Dallas, Nov. 19-21. Sec., Dr. M. F. Bettencourt, Mart.

Virginia: Richmond, Dec. 10-13. Sec., Dr. J. W. Preston, 215 S. Jefferson St., Roanoke.

West Virginia: Charleston, Nov. 19-21. Sec., Dr. S. L. Jepson, Masonic Bldg., Charleston.

Arkansas Eclectic May Examination

Dr. C. E. Laws, secretary of the Arkansas Eclectic Medical Board, reports the written examination held at Fort Smith, May 13-15, 1918. The examination covered 12 subjects and included 120 questions. An average of 75 per cent. was required to pass. Twenty-seven candidates were examined, all of whom passed. The following colleges were represented:

College PASSED	Year Grad.	Per Cent.
California Eclectic Medical College	(1915)	88.1
American Medical College	(1896)	85.9
Kansas City College of Med. and Surg.	(1918)	81.4, 81.7, 82.6, 83.4, 84.3, 84.7, 84.7, 85, 85.1, 85.5, 86.2, 86.5, 86.7, 86.7, 87.5, 87.8, 88.1, 88.8, 89.1, 89.3, 89.6, 89.7, 90.3.
Lincoln Medical College	(1918)	87, 87.8

One candidate, a graduate of the American Medical College in 1906, received a license that had been revoked for one year.

New Mexico July Report

Dr. W. E. Kaser, secretary of the New Mexico Board of Health and Medical Examiners, reports that 8 candidates were licensed on credentials and 1 candidate was licensed through reciprocity at the meeting held at Sante Fé, July 8-9, 1918. The following colleges were represented:

College LICENSED ON CREDENTIALS	Year Grad.	No. Licensed
Rush Medical College	(1882) (1916)	2
Louisville Medical College	(1896)	1
Tulane University	(1911)	1
Starling Medical College	(1888)	1
Pulte Medical College	(1892)	1
Medical College of the State of South Carolina	(1904)	1
University of Texas	(1896)	1

College LICENSED THROUGH RECIPROCITY	Year Grad.	Reciprocity with
University of Arkansas	(1910)	Arkansas

West Virginia Reciprocity Report

Dr. S. L. Jepson, health commissioner of the West Virginia Public Health Council, reports that 16 candidates were licensed through reciprocity including up to July 9, 1918. The following colleges were represented:

College LICENSED THROUGH RECIPROCITY	Year Grad.	Reciprocity with
American Medical Missionary College	(1902)	Tennessee
Kentucky School of Medicine of Louisville	(1903)	Kentucky
University of Louisville	(1890)	Kentucky
Tulane University	(1914)	Louisiana
University of Maryland	(1908) (1915)	Maryland
Marion-Sims College of Medicine	(1897)	Missouri
Eclectic Medical College	(1905)	Illinois
Jefferson Medical College	(1914)	Penna.
Medical College of Virginia	(1898) (1906) (1909) (1910,2)	Virginia
University College of Medicine	(1908)	Virginia
Queen's University	(1908)	Indiana

Book Notices

The Diagnosis and Treatment of Venereal Diseases in General Practice. By L. W. Harrison, D.S.O., Lecturer on Venereal Diseases and Officer in Charge, Military Hospital, Rochester Row. Cloth. Price, $7.50. Pp. 482, with 100 illustrations. New York: Oxford University Press, 1918.

Harrison has had in view a book that will bring home to the general practitioner his responsibility in the care of venereal diseases, will interest him in them, and will show him how relatively simple and satisfactory their treatment is, once the knowledge of how to treat them has been mastered. To this end he has omitted the highly technical procedures that only the expert can carry out well, and has given full space to the simpler measures, which are all that are required in the great majority of cases. This is a difficult task and requires judgment as well as a knowledge of the subject based on large experience. Fortunately the author has had this experience in civil and military practice, and brings to the subject a maturity of judgment that has enabled him to select the essential parts. The result is a book which the expert may well consult, but which is particularly useful to the general practitioner. In it he finds the well-tried methods clearly described, the important things stressed, so that he is not left in uncertainty as to what course he should follow by a multiplicity of detail which leaves him finally in confusion. It is an excellent book. Its publication is timely, and its circulation will be beneficial to the medical profession and to the public, who have a right to expect from their medical advisers intelligent care of these diseases.

A Laboratory Manual of Elementary Qualitative Chemical Analysis for Students of Medicine, Dentistry, Pharmacy and Science. By A. R. Bliss, Jr., A.M., Phm.D., M.D., Professor of Pharmacology, School of Medicine, Emory University. Second edition. Cloth. Price, $2.25 net. Pp. 194. Philadelphia: W. B. Saunders Company, 1918.

What was written about the first edition of this book applies with almost equal force to this edition. It is true that some of the glaring errors pointed out in our previous review have been corrected, and an attempt, at least, has been made to have the book conform more to the modern theories as applied to chemical analysis. There is, however, nothing new or unique either in the subject-matter or in the arrangement. There are in existence many textbooks dealing with this subject, and why there should be added this one we fail to see, unless it be as we said before simply to attach one's name to a collection of well known facts presented under the camouflage of a nice appearing book.

Aids to Rational Therapeutics with U. S. A. Pharmacopeia Equivalents. By Ralph Winnington Leftwich, M.D., C.M., M.R.C.S. Cloth. Price, $1.50. Pp. 233. New York: William Wood & Co., 1918.

The author has placed all diseases in forty groups on the basis of their pathology and similarity of treatment, believing that this is the simplest way to teach therapeutics. This conception has some commendable features. The book will not, however, be of much value to American physicians because the prescriptions are long and complicated, many of the ingredients are drugs that are not even slightly used in this country, and many of the preparations recommended will not bear the scrutiny of scientific investigation.

Emergencies of a General Practice. By Nathan Clark Morse, A.B., M.D., F.A.C.S., Surgeon to Emergency Hospital, Eldora, Iowa. Cloth. Price, $4.50. Pp. 449, with 251 illustrations. St. Louis: C. V. Mosby Company, 1918.

The author has discussed briefly all the emergency methods of a general practice. Many subjects are, of course, only enumerated. It seems a mistake to attempt to cover a field that includes the reduction and maintenance of fractures, the treatment of compound fractures, amputations, obstetric emergencies and infected wounds in so brief a way as is necessary in a volume no larger than this. The explanations are explicit and the illustrations well selected.

Medicolegal

Damages Recoverable for Miscarriage

(Wallace v. Portland Railway, Light and Power Company (Ore.), 170 Pac. R. 283)

The Supreme Court of Oregon reverses a judgment obtained by the plaintiff for damages for a miscarraige alleged to have been caused by the defendant's negligence in suddenly starting a street car from which the plaintiff was alighting, in which she claimed damages not only for the injuries and pain she suffered, but also for the loss of her child. The court says that there can be no question that a plaintiff, a pregnant woman, may recover for the pain and injury, both physical and mental, experienced by her from a miscarriage brought about by the negligent act of a defendant. She is entitled to have nature in such cases work out its proper function in due time. Any disturbance of the period or process of gestation resulting in her injury is actionable. It is only, however, for the injury to her that she can recover. She has no action for the loss of the child. The injury, if any, is too remote and speculative to form a basis for damages. Furthermore, the court holds that the defendant was not helped by an assignment of error in a refusal of the trial court to allow a witness called for the defendant to answer whether or not she was told by the plaintiff and her husband, prior to the occurrence of the accident, that they were contemplating an operation on the plaintiff. It was true that if the defendant could have shown that the plaintiff and her husband brought about the miscarriage in question by some act of their own, it would have been material to the defense; but the mere expression of an intention to have an operation performed was of no moment whatever, unless followed by testimony tending to show that the intent was carried into execution. The trial judge was clearly right in excluding the proffered testimony, as it did not appear by the record that there was any effort to supplement the offer by proof of any overt act of the plaintiff or her husband committed with a view to produce an abortion.

Cost of Operation Added to Alimony

(Rotge v. Rotge (Colo.), 171 Pac. R. 360)

The Supreme Court of Colorado affirms a judgment in favor of the plaintiff, who asked that the defendant be required to pay the necessary expenses—hospital bill and surgeon's fee—incurred for an operation which it had become necessary for her to undergo while a suit for divorce was pending between them and after she had been awarded $125 a month temporary alimony. The court says it was conceded that the surgeon who performed the operation had sued the parties to this suit before a justice of the peace and recovered judgment against both for the amount of his fee, but nothing had been recovered on the judgment, though the defendant had been garnisheed as being indebted to the plaintiff, and had answered thereto, admitting his indebtedness for the monthly alimony due. The court thereupon found the issues in favor of the plaintiff, and that the expenses of the operation and hospital bill were an unforeseen contingency, for which no provision had been made by the court and that the bills were just, and ordered that the defendant pay the hospital bill and the judgment for the surgeon's bill rendered in the justice court, and that the payment of these amounts should in no wise be deducted from or in any way affect the temporary alimony required by prior order of the court to be paid by the defendant to the plaintiff each month. Continuing, the supreme court says that the ordinary rule that, when in a divorce suit temporary alimony has been awarded the wife and the husband duly pays it, he will not be liable thereafter for necessaries subsequently furnished her, had no application to the facts of this case. It might be that the husband, in this case, might have avoided the judgment against himself in the justice court by making the defense here suggested. This he did not do, and the finding was that a judgment was rendered therein against both of the parties hereto and stood unpaid. While it was the debt of the husband, it was likewise the debt of the wife, and the substantial effect of the order was that the husband furnish her with money to pay her debt. If compliance with the order incidentally satisfied a judgment against the husband, it in no wise affected this controversy. The question here related to the power of the district court, in which the divorce suit was pending, to increase the payments required to be made by the husband during the pendency of the suit, to meet the needs of the wife which had arisen because of changed conditions, and had nothing to do with the rights of third parties as against the husband. But the order directing the defendant to pay the hospital bill incurred by the plaintiff, and the judgment in favor of the surgeon for his services, is modified to require him to pay the necessary amount into the court to be used by the plaintiff in the discharge of such indebtedness, instead of requiring him to pay it directly to persons not parties to the suit.

Society Proceedings

COMING MEETINGS

American Public Health Association, Chicago, Dec. 9-12.
Assn. for S. & P. of Inf. Mort., Asheville, N. C., Nov. 11-14, 1918.
Medical Association of Porto Rico, Ponce, Dec. 14-15.
Southern Medical Association, Asheville, N. C., Nov. 11-14, 1918.
Southern Surgical Association, Baltimore, Dec. 17-19.
Western Roentgen Society, Chicago, Nov. 20-22.

AMERICAN ASSOCIATION OF OBSTETRICIANS AND GYNECOLOGISTS

Thirty-First Annual Meeting, held at Detroit, Sept. 16-18, 1918

(Concluded from page 1340)

Sarcoma of the Left Ovary in a Child Twenty-Three Months Old

Dr. Herman E. Hayd, Buffalo: A small round cell sarcoma of the right ovary, about the size of a goose egg, was removed from a baby aged 23 months. The child's temperature was 101 F. It was peevish and irritable, and lost considerable flesh, had been sick about ten days, was cutting the eye teeth, and had some bronchitic sounds in the chest, with areas of bronchopneumonia in both lungs. The liver dulness was much increased. The bowels and kidneys were functionating satisfactorily. In the lower right abdominal quadrant could be felt a large, movable, smooth tumor, not painful to the touch. We treated the symptoms, irrespective of the abdominal condition. In the course of four or five days the temperature became normal, the child began to play, took considerable semisolid food, the tongue cleared up, the feverish condition of the mouth and lips passed away, and the mother was told to take the child into the country and to return in a few weeks or earlier, if the child's condition did not continue to improve. The child remained at home for ten or twelve days, when I saw it again. The lungs were clear, but the abdomen contained considerable fluid, and the mass, which was still movable, was tender. The temperature was 100 F.; the child looked sick and was again fretful and irritable. She was prepared for operation immediately. The tumor was free in the abdomen, with the right tube attached to it. The appendix was long and curled on itself, and it was also removed. The uterus and the left tube and ovary were normal. Quite a little bloody fluid ran away when the abdomen was opened. The liver was palpated and found to be much enlarged and filled with nodular masses. The child suffered little shock and recovered from the operation, leaving the hospital on the thirteenth day. It died at the end of the fifth week, no doubt from exhaustion with acute hepatitis and, perhaps, general sarcomatosis.

DISCUSSION

Dr. Thomas B. Noble, Indianapolis: My experience with sarcoma of the ovary comprises four cases in children, three of whom are dead. One, a girl of 16 who was operated on four years ago, is living.

Do Not Sterilize Women when Operating for Tuberculous Peritonitis

Dr. J. Henry Carstens, Detroit: Thousands of tuberculous nodules are left in the abdomen which are absorbed and disappear; hence we have a right to believe that the few nodules that are on the tubes and ovaries will also disappear after we open the abdomen with or without irrigation or drainage. There is no use in removing the tubes if they are only affected by tubercles. Many of the women are young and unmarried, and should not be sterilized needlessly.

Intestinal Actinomycosis

Dr. John W. Keefe, Providence, R. I.: Actinomycosis of the digestive tract practically never occurs in the stomach or small intestine, possibly because the acid contents of the stomach and the fluid secretions found in the small intestine are less irritating to its mucous lining. An acute or chronic inflammation of the appendix may open the door for the entrance of the actinomycotic organism. Actinomycosis is practically never carried by the lymphatics and but rarely by the blood stream. The method of extension is by continuity of tissue. Hence, general actinomycosis, unlike tuberculosis and blastomycosis, is extremely rare.

The early diagnosis of actinomycosis is generally overlooked. A firm swelling, painless on pressure, occupying either the right or left inguinal regions, usually the right, is the sign most frequently found in cases of intestinal actinomycosis.

The surgical measures to combat the disease consist of excision in some cases and incision in others, and curetting of diseased tissues together with the use of antiseptics and the maintenance of free drainage. Injections of 4 per cent. aqueous solution of liquor formaldehydi have been employed with success. Vaccines and serums have been found of value only in a few reported cases. The roentgen ray has not shown any marked beneficial effect. In a few instances radium has been given with marked immediate results. Large doses of potassium iodid, 90 grains, three times a day, have been given with success in many cases. The marked efficacy claimed for this drug is readily explained by the fact that it promotes the absorption of granulation tissue, acting in very much the same manner as in the case of granulomas of tertiary syphilis.

The Rôle of Congenital Colonic Membranes as a Causative Factor in Disease

Dr. J. P. Runyan, Little Rock, Ark.: Colectomy is a radical operation for the relief of intestinal stasis, and in the skilled hands of Lane may be fairly safe; but it has always appeared to me to be unjustifiable, provided a simpler and a safer operation could be devised. Acting on the hypothesis that intestinal stasis is due to colonic membrane formation, the result of imperfect embryologic development, which membrane causes more or less angulation of the bowel, we began dividing or removing this membrane with most gratifying results. It is a splendid, safe and sane substitute for colectomy in the treatment of intestinal stasis, and an operation devoid of mortality.

DISCUSSION

Dr. William Seaman Bainbridge, New York: Constipation is a symptom just as diarrhea is a symptom. The worst cases of stasis are those in which the condition is accompanied frequently with diarrhea. The frequency of the number of stools does not mean that the putrefying and noxious material is not there. The retained stool is being absorbed. There is an overflow of retention in the bowel just as there is overflow of retention in the bladder. That point Mr. Lane has emphasized repeatedly, and the worst cases of stasis are of that type. When the intestinal canal is dammed, the body as a whole or in part cannot take care of the added amount of poisoning which such retention involves. As to treatment, to say that Mr. Lane or any of those that follow him advocate colectomy for stasis is so radical that it does harm. Lane put himself on record in regard to that in 1901 when he said that nine tenths of the patients with stasis ought never to see a surgeon.

Dr. James E. Davis, Detroit: The body in its development usually follows the law that function determines anatomic form. With some arrest in the embryonic development, no interference with normal function occurs; but there are cases in which the arrested anatomic form does interfere definitely. I performed a necropsy on a child that illustrates this point. A child, aged 6 weeks, died apparently of symptoms of inanition. The right lobe of the liver appeared displaced well down into the pelvis; in fact, it seemed to be a development and a displacement. The gallbladder was in a right angled position with the midaxis of the bowel. The lower border of the right lobe of the liver was down in the lowermost part of the pelvis. Through the right hernial ring the cecum and appendix were herniated. The symptomatology was something like this: For the first four days after birth there was no trouble whatever; then there appeared a train of gastro-intestinal disturbances, and a little later metabolic disturbances were found. The terminal picture was that of ordinary inanition. In my judgment this abnormality of position was the etiologic factor of the gastro-intestinal and metabolic disturbances.

Dr. Gordon K. Dickinson, Jersey City, N. J.: In the June, 1918, issue of the *Annals of Surgery* is published a very interesting article on the anatomy and embryology of the subject under discussion. I have forgotten the name of the author. His observations are based on embryologic researches, the literature and otherwise. He says that all these bands are of embryonal origin and can be traced back to the very early period of fetal life.

Dr. Hugo O. Pantzer, Indianapolis: We find these conditions often associated with a narrow costal angle with visceroptosis, congenital defects, and so on. By percussion one can tell whether the cecum is over the brim or not. By auscultation and percussion much can be learned about the abdominal contents.

Current Medical Literature

AMERICAN

Titles marked with an asterisk (*) are abstracted below.

Annals of Otology, Rhinology and Laryngology, St. Louis

June, 1918, **27**, No. 2

1 Report on Otolaryngology in First Year of War. H. P. Mosher, Washington.—*p.* 437.
2 Case of Otogenous Temporal Abscess with Hemiplegia, Facial Paralysis and Aphasia: Cerebral Drainage, Decompression, Recovery. O. Glogau, New York.—p. 456.
3 Pathology of Sinus Thrombosis. A Braun, New York.—p. 461.
4 Indications for Variations in Technic in Tonsillectomy. C. L. Adams, Kokomo, Ind.—p. 474.
5 Reactions of Normal Labyrinth: Experience in U. S. Aviation Examinations. H. Hastings, Los Angeles.—p. 481.
6 Case of Neuritis of Eighth Nerve Involving Both Branches from Focal Infection in Appendix. G. W. Mackenzie. Philadelphia.—p. 490.
7 Gasparo Tagliacozzi and His Contribution to Rhinoplasty.—M. and I. Frank, Chicago.—p. 505.
8 Examination of Applicants for Aviation Service, U. S. Army. W. A. Scruton, New York.—p. 528.
9 Infections of Paranasal Sinuses in Infants and Young Children. L. W. Dean, Iowa City, Iowa.—p. 534.
10 Adenocarcinoma of Nose; Four Cases. L. M. Hurd, New York.—p. 557.
11 Foreign Body (Carpet Tack) *Remaining* Two Years in Bronchial Tube without Pathologic Symptoms. D. Roy, Atlanta.—p. 565.
12 Blastomycosis of Upper Respiratory Tract: Case Primary in Larynx. F. L. Dennis, Colorado Springs.—p. 571.
13 Case of Granuloma of Mastoid Simulating Subperiosteal Abscess. J. D. Richards, New York.—p. 587.
14 Case of Mastoidectomy for Acute Suppurative Otitis Media, Followed Later by Facial Paralysis, Almost Total Deafness, Meningitis and Death. J. R. Page, New York.—p. 589.
15 Cases of Vincent's Angina. C. F. Theisen, Albany, N. Y.—p. 594.
16 Radical Treatment of Peritonsillar Abscess. C. F. Theisen, Albany, N. Y.—p. 600.
17 Syphilitic Necrosis of Intermaxillary Bone. C. W. Richardson, Washington, D. C.—p. 605.
18 Two Cases of Unusual Wounding of Lateral Sinus. V. Dabney, Washington, D. C.—p. 607.
19 Digest of American and English Otologic Literature for Year 1917. O. M. Rott, Spokane, Wash.—p. 609.
20 Abscess of Left Frontal Lobe Following Suppuration of Frontal Sinus; Report of Case and Exhibition of Specimen. W. V. Mullin, Colorado Springs.—p. 667.
21 Bone Transplantation for Correction of Nasal Deformities. W. F. Callfas, Omaha.—p. 672.
22 Lothrop Operation for Frontal Sinusitis; Report of Two Cases. J. J. Pattee, Pueblo.—p. 677.
23 Nose and Throat in Medical History. D. A. Vanderhoof, Colorado Springs.—p. 685.
24 Relation of Blood Pressure to Pathologic Conditions of Head and Neck. T. E. Carmody, *Denver.—p. 691.*

Annals of Surgery, Philadelphia

September, 1918, **68**, No. 3

25 *Preliminary Report of Method for Estimating in Vivo Germicidal Activity of Antiseptics. J. A. Perkins—p. 241.
26 Treatment of Gunshot Fractures of Mandible. J. B. Roberts, Philadelphia.—p. 245.
27 Operative Treatment of Hernia: Analysis of Eight Thousand, Five Hundred and Eighty-Nine Cases. W. B. Coley and J. P. Hoguet, New York.—p. 255.
28 Case of Lipoma of Funiculus Spermaticus. H. Schiller, Chicago.—p. 269.
29 Fecal Fistula Following Strangulated Hernia: Report of Five Cases. W. D. Haggard, Nashville, Tenn.—p. 272.
30 Traumatic Abdomen. J. B. Deaver, Philadelphia.—p. 275.
31 Acute Pancreatitis. J. B. Deaver, Philadelphia.—p. 281.
32 Incidence of Calculi in Gallbladder in One Thousand Six Hundred Necropsies. L. J. Mitchell, Chicago.—p. 289.
33 Kidney Ureter Abnormalities; Two Cases. T. N. Hepburn, Hartford, Conn.—p. 294.
34 *Diverticula of Bladder. E. S. Judd, Rochester, Minn.—p. 298.
35 Treatment of Wounds of Genital Organs in Warfare. C. G. Cumston, Geneva, Switzerland—p. 306.
36 Anatomic Methods of Approach in Operations on Long Bones of Extremities. J. E. Thompson, Galveston, Texas.—p. 309.
37 Lengthening of Achilles Tendon in Treatment *of Complicated Pott's* Fracture. C. N. Dowd, New York.—p. 330.
38 *Receiving and Operating Pavilions for Modern Base Hospital. A. P. C. Ashhurst, Philadelphia.—p. 333.
39 Treatment of Malignant Peritonitis of Ovarian Origin; Two Cases. E. A. Codman, Boston.—p. 338.

25. **Germicidal Activity of Antiseptics.**—With a view to reducing the margin of error in estimating the bacterial contents of a wound with microbe charts Perkins and his associates have been culturing the wounds, counting the number of colonies and plotting curves as in microbe charts. In order to reduce so far as possible the element of the personal equation, the work has been done by one man. The inoculations were made from the same part of the surface of the wound, one definite spot being selected and used throughout; the attempt was made to get a uniform-sized drop; the same platinum wire loop was used each time. The drop obtained was inoculated at the bedside in 2 c.c. of plain bouillon, the bouillon suspension, undiluted, was immediately poured over an agar-agar plate, which was then covered and turned upside down and marked with the patient's number, the number of the culture, and the time the culture was taken. The plate was then taken to the laboratory and placed in an incubator and kept at 37 C. At the end of twenty-four hours the colonies were counted, macroscopically, and recorded. Carrying out this procedure during different stages of wound treatment with antiseptics some idea can be obtained of the comparative strength of antiseptics and the length of time during which they are active when applied to human tissues in the presence of infection.

34. **Diverticula of Bladder.**—During a period of ten years forty-four patients were operated on in the Mayo Clinic for bladder diverticula. Judd says that diverticulum of the bladder is much more common than has been realized. The condition is perfectly amenable to surgical treatment. In this series of forty-four patients, so far as is known, all but ten are living. Two of the patients died within a few days after a drainage operation; both of these men had septic kidneys and drainage was of no avail. The other deaths occurred after the patients had been up and around for some time, and in most instances after they had gone home. The

general and functional results in the remaining thirty-four patients have been uniformly good. The functional result, in so far as emptying the bladder is concerned, may, Judd says, be slow to adjust itself, though eventually it will be practically perfect.

38. **Receiving and Operating Pavilions for Modern Base Hospital.**—Ashhurst describes the adaptation of standard barrack buildings to the uses of receiving, bathing, operating, and roentgen-ray pavilions in a base hospital. The buildings described form part of Base Hospital 34, American Expeditionary Forces, which is situated in the outskirts of a large city, at a considerable distance from the front.

American Journal of Physiology, Baltimore

September, 1918, **47**. No. 1

40 *Action of Pituitary Extract on Kidney. F. P. Knowlton and A. C. Silverman, Syracuse, N. Y.—p. 1.
41 *Effect of Food in Increasing Oxidation. W. E. Burge and A. J. Neill, Urbana, Ill.—p. 13.
42 *Material Lost in Menstruation of Healthy Women. L. H. Gillett, L. Wheeler and A. B. Yates, New York.—p. 25.
43 Muscular Strength and Muscular Symmetry in Human Beings. E. G. Martin and W. H. Rich.—p. 29.
44 Significance of Undissociated Carbon Dioxid in Respiration. R. W. Scott, Cleveland.—p. 43.
45 Differences in Catalase Content of Muscle from Different Parts of Stomach. W. C. Alvarez and E. Starkweather, San Francisco.—p. 60.
46 Catalase Content of Mucous Membrane from Different Parts of Digestive Tract. W. C. Alvarez and E. Starkweather, San Francisco.—p. 67.
47 *Comparison of Activity of Extracts of Pars Tuberalis with Extracts of Other Regions of Ox Pituitary. W. J. Atwell and C. J. Marinus, Ann Arbor, Mich.—p. 76.
48 Studies on Physiology of Reproduction in Birds. Effects of Quinin on Production of Egg Yolk and Egg Albumen. O. Riddle and C. E. Anderson, Long Island, N. Y.—p. 92.
49 Postmortem Melanin Pigment Formation in Pigmentless Retinas and Choroids of White Ring Doves. O. Riddle and V. K. La Mer, Long Island, N. Y.—p. 103.
50 *Chemical Composition of Brain of Normal and Ataxic (?) Pigeons. M. L. Koch and O. Riddle, Long Island, N. Y.—p. 124.
51 New Form of Aerotonometer. P. M. O'Sullivan, Toronto.--p. 137.
52 Lung as an Aerotonometer. P. M. O'Sullivan, Toronto.—p. 143.
53 Heat Liberated by Beating Heart. C. D. Snyder, Baltimore.—p. 156.

40. **Action of Pituitary Extract on Kidney.**--Knowlton and Silverman found that the oxygen consumption by the kidney is not increased during the diuresis induced by pituitary extracts. Using the oxygen consumption as the criterion, there is no evidence that pituitary extract stimulates the renal cells. Throughout their experiments increased blood flow through the kidney was an invariable accompaniment of pituitary diuresis. From the evidence at hand it seems possible to explain the diuretic action of pituitary extract entirely on the basis of the vascular changes and increased filtration pressure obtaining in the kidney.

41. **Effect of Food in Increasing Oxidation.**—The increase in oxidation following the ingestion of food is attributed by Burge and Neill to the increase in catalase produced by the stimulation of the digestive glands, particularly the liver, to an increased output of this enzyme. The glycerin radical of the fat molecule is responsible for the stimulating effect of the fats; the end products of protein digestion, presumably the amino-acids, for the stimulating effect of meat; and the simple sugars for the stimulating effect of the starchy foods.

42. **Material Lost in Menstruation of Healthy Women.**—In the experiments referred to the subjects were healthy women who were working in the laboratory from ten to twelve hours a day. In general the object was to ascertain whether the calcium and phosphorus requirements of women differed materially from those of men. The diet of each subject was uniform from day to day and the daily intake and output for nitrogen, calcium and phosphorus were determined by analysis. The data obtained show that there is no pronounced periodicity in the output of phosphorus and calcium and that the amounts of these elements lost in menstruation are not sufficient to make the nutritive requirements of women for these elements materially different from those of men of the same weight.

47. **Extracts of Several Parts of Ox Pituitary.**—According to Atwell and Marinus a pars tuberalis may be distinguished in the bovine hypophysis. It differs histologically from both the pars intermedia and the pars anterior propria. But, extracts of the pars tuberalis are very inferior to extracts of the pars intermedia in producing contractions of the isolated uterine segment and are likewise inferior to extracts of the neural stalk in raising the blood pressure of the dog. Extracts of the pars tuberalis equivalent to 5 mg. of fresh gland substance failed to produce a rise of blood pressure in the rabbit. It is believed that the active effects displayed by extracts of the pars tuberalis are due to an inclusion of some of the neural stalk substance during the preparation of the extract. It would seem improbable that the pars tuberalis is responsible for the origin of active principles which increase uterine contraction or raise the blood pressure. An extract of the pure pars intermedia of the ox is capable of producing a strong pressor effect when injected intravenously into the dog. An extract of pure pars intermedia representing 5 mg. of the fresh gland substance produces a distinct rise of blood pressure in the rabbit. An extract of the pure neural stalk is fairly powerful in producing a rise of blood pressure in the dog. This removes one objection to the possibility that the secretion of the pars intermedia passes into the neural lobe and then, via the neural stalk, into the third ventricle.

50. **Chemistry of Brain of Normal and Ataxic Pigeons.**—The brains of birds which have very little control of the voluntary movements (ataxia?) were analyzed by Koch and Riddle. The data thus obtained are compared with similar data obtained on the brains of normal birds of the same parentage. The derangement first appeared (mutation?) under conditions known to lead to weakness in the offspring. The disorder is exhibited in all degrees and has been inherited undiminished to the fifth generation. Usually it is shown from the earliest age of the bird and is probably present throughout the whole development of the bird. The brains of the affected birds show increased values for moisture, protein and extractive sulphur; decreased values for lipoids, phosphatids and cholesterol. In general the less ataxic individuals show values intermediate to those of the normals and most ataxic. The distribution of sulphur and phosphorus in the various chemical fractions was determined. The results of the analyses of the affected brains are interpreted as suggesting a chemical underdifferentiation or immaturity of these brains. The brains of affected birds of approximately mature age are chemically more like the brain at earlier stages of development.

Archives of Internal Medicine, Chicago

September, 1918, **22**, No. 3

54 *Study of Eighty Cases of Empyema at Camp Upton. H. Brooks and R. L. Cecil, Camp Upton, N. Y.—p. 269.
55 *Voluntary Acceleration of Heart Beat. H. F. West and W. E. Savage, Boston.—p. 290.
56 *Acute Endocarditis Following War Wounds. H. T. Karsner, France.—p. 296.
57 Pathologic Report on Forty-Three Cases of Acute Poliomyelitis. H. L. Abramson, New York.—p. 312.
58 Aberrant Electrocardiogram Associated with Sclerosis of Atrioventricular Bundle Branches and Their Terminal Arborizations. E. P. Carter, Cleveland.—p. 331.
59 *Epidemic of Mumps at Camp Wheeler, October, 1917-March, 1918. M. J. Radin, Camp Wheeler, Ga.—p. 354.
60 Study of Eight Cases of Acute Nephritis. D. W. Atchley, New York.—p. 370.

54. **Empyema at Camp Upton.**—Eighty cases of a highly virulent type of empyema have been analyzed by Brooks and Cecil at Camp Upton in a series of 300 pneumonias. Fifteen of these were caused by the pneumococcus; fifteen others were sterile; the remainder of the cases were caused by streptococcus,. usually of the hemolytic type. In this series of cases empyema has been constantly associated with pneumonia of either the bronchial or lobar type. Usually a bronchopneumonia has accompanied a streptococcus empyema, and a lobar pneumonia the pneumococcus empyemas. In the great majority of cases the organism which has been found

to be the causative agent in the pneumonia has also been isolated in pure culture from the pleural exudate. In nine cases, however, a pneumococcus pneumonia was associated with a streptococcus empyema. The onset of the pneumonia and the empyema is apparently simultaneous in some cases. This epidemic of empyema has been, in large part, independent of measles and other similar infections.

The clinical symptoms and the physical signs differ from those of classic empyema. Diagnosis is frequently difficult by reason of the equivocal physical signs and the indefinite symptomatic picture. Diagnostic aspirations are the most certain means of discovery of the condition in its early stage. The roentgen ray stands second in diagnostic importance. Of the physical signs, alterations in percussion seem to be the most helpful. The interstitial type of bronchopneumonia, recently described by Cole and MacCallum, is usually found associated with streptococcus empyema. Fibrinopurulent pericarditis is the most frequent complication. Pyopneumothorax has also been observed in a number of cases. The mortality rate is high and the prognosis is serious. Medical treatment is essentially expectant. The most efficacious method of surgical treatment and the correct time for its application are yet to be determined.

55. **Acceleration of Heart Beat.**—A young medical student who is entirely healthy and is apparently free from all physical and neurotic defects has had no cardiovascular symptoms whatever and physical examination shows the heart to be of normal size and free from abnormal sounds and murmurs. Attacks of tachycardia have never been noticed. He discovered the ability to increase his heart rate voluntarily during the course in physiology in his freshman year and has practiced it only at times of making observations. During the period of acceleration there is a very slight increase in the rate and the depth of respiration and the pupils dilate moderately as recorded by other observers. No definite physical effort is made, but constant mental concentration must be maintained, which, after several, closely repeated trials, becomes quite fatiguing. The rate begins to increase almost immediately following the word of command and reaches its maximum after about ten heart cycles. All tracings show a decrease in amplitude of the pulse waves rather than an increase with marked dicrotism. There was a distinct rise in blood pressure with each acceleration with the exception of the effort at the height of the atropin effect, when there was a drop of 10 mm. from the reading made five minutes before. The latter reading, however, was 10 mm. higher than the first record made before the atropin was given. The greatest increase noted was one of 18 mm. accompanying an acceleration of 27 beats per minutes.

Electrocardiograms show no distinctive characteristics other than a slight notching of R and a diphasic T in the third lead. There is a definite, but not unusually marked, sinus arrhythmia. During the periods of acceleration there was no change in the P-wave, in the P-R interval, nor in the distance from the beginning of R to the end of T. The amplitude of T was not changed. There was some rhythmic variation in the height of R both before and during the period of acceleration. The general average of the R deflections was slightly lower during the periods of acceleration, but by not more than one tenth of the height preceding the increased rate. After subcutaneous injection of 0.002 gm. of atropin sulphate the rate was increased from 69 to 94 beats per minute. Electrocardiograms taken at this time show a very slight increase in the amplitude of T in the first lead and a correspondingly slight decrease in the height of R. No change in the distance from the beginning of R to the end of T could be made out. The sinus arrhythmia was almost, but not completely, obliterated. When respirations were forced without atropin the sinus arrhythmia becomes more marked.

56. **Endocarditis and War Wounds.**—Acute endocarditis was observed by Karsner in fourteen necropsies. Twelve were pure acute disease and two showed acute lesions superimposed on preceding chronic lesions. The twelve acute cases showed involvement of the aortic valve alone in five cases; the mitral, two cases; the pulmonary, one case; the tricuspid, one case; combined mitral and aortic, three cases. One case showed chronic mitral stenosis with acute mitral and aortic lesions; one case showed chronic mitral and aortic stenosis with acute mitral lesions. *Staphylococcus pyogenes-aureus* was isolated in three cases, two of which were pyemias and one was a septicemia. *Streptococcus pyogenes* was isolated in nine cases, two of which were pyemias and seven were septicemias. Two cases were clinically and pathologically septicemias, but were not demonstrated to be so bacteriologically. All the patients had suffered serious primary wounds, five of which involved joints and four others of which involved other serous cavities. These wounds are irregularly distributed in regard to the valves attacked except that both the cases showing superimposition of acute on chronic lesions were penetrating wounds of the pelvis. In contrast to these figures, there were six cases of infected wounds of the joints which failed to show endocarditis, twenty-three cases of wounds of other serous cavities not including head wounds and forty-two cases of septicemia or pyemia without noticable lesions of the endocardium.

59. **Epidemic of Mumps at Camp Wheeler.**—Among approximately 18,000 men at Camp Wheeler, there were 5,756 cases of mumps, an incidence of 32 per cent. Every third man in the division, in other words, has had mumps. Of 13,638 total admissions to the hospital to March, 1918, almost one half were mumps—42.2 per cent. The cost of the epidemic to the government was at least $1,000,000. Six hundred and eleven had testicular involvement of various kinds. Suppurative otitis media occurred in twenty cases. Pancreatitis occurred in fourteen cases. Five cases of lobar and one case of bronchopneumonia occurred. There were nine cases of bronchitis of the ordinary type and course. Radin says that the most diagnostic prodromal sign, pathognomonic, in fact, was first noted by Lieutenant Hathcock. The sign is tenderness just beyond the angle of the jaw on running the finger toward the angle, under the mandible. If the parotid gland is at all involved, the patient winces with pain. This occurs before any swelling can be made out. It is almost constant, it is early, it is definite and it is exclusive; therefore it is diagnostic.

Boston Medical and Surgical Journal

Oct. 3, 1918, **179**, No. 14

61 *Kidney Function in One Hundred Cases of Hypertension. W. C. Rappleye, Foxborough.—p. 441.

61. **Kidney Function in Cases of Hypertension.**—A study of the blood urea nitrogen, elimination of phenolsulphonephthalein and urine analysis was made by Rappleye on 100 cases of elevated blood pressure, using the figure of 150 to 155 mm. systolic pressure as the low value for selection. With but four or five exceptions, the patients were in apparently good physical condition and active, none showed any edema, dyspnea, fever or other compromising conditions. In this group of patients 70 per cent. showed blood urea nitrogen values below 16.0 mg. per 100 c.c. (whether considering the whole group or only those showing a systolic value of over 170 mm. or a diastolic figure of over 100 mm.), and 66 per cent. showed a dye excretion of 40 per cent. or higher; 16 per cent. showed a value of 40 per cent. A slightly lower percentage was found in those patients showing a higher blood pressure (systolic of 170 mm. or over, diastolic of 100 mm. or over). Twenty-eight per cent. showed both a urea nitrogen of 16.0 mg. or over and a dye excretion of 40 per cent. or less. Ninety per cent. of the cases showing a urea nitrogen of 16.0 mg. or over had a dye excretion of 40 per cent. or less. Twenty-four of the cases showed a blood pressure over 160 mm., a urea nitrogen below 15.0 mg. and a phthalein over 50 per cent. There have been thirteen deaths in this group with eleven necropsies. The causes of death in ten of the thirteen cases were associated with either the cardiovascular system or acute infections.

Bulletin of Canadian Army Medical Corps, Ottawa

September, 1918, **1**, No. 6

62 Typhoid Spine. W. Osler.—p. 78.
63 Nature of Shell Shock. F. Dillon.—p. 79.
64 *Early Stages of Trench Nephritis. G. S. Strathy.—p. 83.
65 Botulism. E. C. Dickson.—p. 85.
66 Some Aspects of Military Ophthalmology. S. H. McKee.—p. 87.

64. **Treatment of Early Stages of Trench Nephritis.**—Strathy says that with rest in bed and a simple diet of milk and milk puddings the large majority of patients improve rapidly. The symptoms calling for active treatment are cough, dyspnea, decrease in urine, headache and convulsions. At the casualty clearing station in which Strathy was stationed if a patient was markedly edematous or his blood pressure high a hot-air bath was given. In nearly all cases this produced free sweating, relieved the cough and headache, and decreased the edema. The patient's bowels were kept fairly free with Epsom salt, but the patients were not severely purged. If the dyspnea did not then subside and was severe, oxygen inhalations almost invariably gave considerable relief. After losing two patients whose deaths were both directly due to the affection of the lungs and pleurae, oxygen treatment was given to all cases of extreme dyspnea, and apparently carried several severe cases through, but when the dyspnea was not relieved by oxygen, and later, when the use of oxygen was forbidden owing to shortage of oxygen supply, aspiration of the hydrothorax was carried out, and immediate improvement resulted. One patient who was in extremis and appeared likely to die within five minutes was aspirated. After the removal of the fluid he was immediately improved and ultimately recovered. The hydrothorax did not recur. Opium in any form for the relief of cough or sleeplessness Strathy abandoned after some unhappy results from its use. It appeared to increase the patient's cyanosis. For convulsions spinal puncture and withdrawal of fluid was done in three out of four cases. The three recovered and the unpunctured patient died. Strathy believes it should be done either when an attack of convulsions is threatening, or as soon after the first convulsion as possible. One-fourth grain of morphin was always given at the onset of a convulsion.

Bulletin of John Hopkins Hospital, Baltimore

September, 1918, **29**, No. 331

67 *Sinus Spud. W. S. Halsted.—p. 195.
68 Medical Industrial Relations of War. D. L. Edsall, Boston—p. 197.
69 Thymus Tumor Associated with Acute Lymphatic Leukemia. R. H. Major, Rosedale, Kan.—p. 206.
70 Wit and Satire on Physician in Hebrew Literature. H. Friedenwald, Baltimore.—p. 209.

67. **Sinus Spud.**—Four cases are cited by Halsted. The nature of the tumors or spuds was the same in the four cases. In the three perineal cases the pictures, were, in every particular, so nearly identical that, presumably, they had also a cause in common. In one instance a urethral fistula developed two years after the excision of the sinus and its fibrous wall. Halsted says that from this we might naturally conclude that a urethral lesion was responsible for all of the perineal spuds, notwithstanding the fact that no one of the three patients could recall having had at any time a urethritis. But this patient had been treated for fistula-in-ano a year before his perineal tumor appeared, and another patient had been operated on for hemorrhoids. In two cases operated on by Halsted, he felt that he could assert positively that at the time of operation the sinus did not communicate with either rectum or urethra. In both of these cases, furthermore, the sinus did not extend in either direction, to the end of the spud. The original urethral or rectal openings must have been very minute and have become closed.

In the three perineal cases the situation of the spud was precisely the same, and the dissection in the two operated cases led to the same spot, namely, to neighborhood of the bulbomembranous urethra. If the three cases had been of rectal origin it is extremely unlikely that the rectal perforation would in each have been identically at the same point. Correct interpretation of the condition is important, although failure to recognize the nature of the tumor could hardly be disastrous. Faulty diagnosis, however, caused three of the patients great distress. A finger-shaped, subcutaneous tumor of the perineum, quite free at its tip and with the hardness and elasticity of cartilage, is probably a sinus spud and may be recognized almost at the first touch of the palpating finger.

Florida Medical Association Journal, Jacksonville

September, 1918, **5**, No 3

71 Diagnosis of Laryngeal Tuberculosis. F. J. Walter, Daytona.—p. 41.
72 Malaria and Multimillionaire. E. Van Hood, Ocala.—p. 42.

Indiana State Medical Association Journal, Fort Wayne

September, 1918, **11**, No. 9

73 Epidemic Streptococcus Infection of Nose and Throat Clinically Considered. W. A. Hollis, Hartford City.—p. 327.

Iowa State Medical Society Journal, Des Moines

September, 1918, **8**, No. 9

74 Strouse's Method of Treating Dropsy. M. H. Thielen, Grundy Center.—p. 317.
75 History of Medicine in Iowa. D. S. Fairchild, Clinton.—p. 320
76 Treatment of Empyema. C. A. Hedblom, Rochester, Minn.—p. 328.
77 Plastic Surgery of Face and Neck. J. H. McGready, Independence.—p. 332.
78 Myocarditis; Its Recognition and Treatment. J. R. Walker, Fort Madison.—p. 334.

Journal of General Physiology, Baltimore

September, 1918, **1**, No. 1

79 Dynamics of Photosynthesis. W. J. V. Osterhout and A. R. C. Haas, Cambridge.—p. 1.
80 Method of Studying Respiration. W. J. V. Osterhout, Cambridge.—p. 17.
81 *Antagonism Between Thyroid and Parathyroid Glands. E. Uhlenhuth, New York.—p. 23.
82 *Further Proof of Existence of Specific Tetany-Producing Substance in Thymus Gland. E. Uhlenhuth, New York.—p. 33.
83 Difference in Action of Radium on Green Plants in Presence and Absence of Light. C. Packard, Woods Hole, Mass.—p. 37.
84 Amphoteric Colloids. Chemical Influence of Hydrogen Ion Concentration. J. Loeb, New York.—p. 39.
85 *Theory of Mechanism of Disinfection, Hemolysis and Similar Processes. S. C. Brooks, Boston.—p. 61.
86 Law Controlling Quantity of Regeneration in Stem of Bryophyllum Calycinum. J. Loeb, New York.—p. 81.
87 Reversal of Reaction by Means of Strychnin in Planarians and Starfish. A. R. Moore, New Brunswick, N. J.—p. 97.
88 Light and Muscle Tonus of Insects. Heliotropic Mechanism. W. E. Garrey, New Orleans.—p. 101.
89 Lutear Cells and Hen-Feathering. A. M. Boring and T. H. Morgan, New York.—p. 127.

81. **Antagonism Between Thymus and Parathyroid Glands.**—From the facts stated by Uhlenhuth it is evident that the thymus gland of mammals contains a substance which is capable of producing tetany when fed to the larvae of certain species of salamanders (*Ambystoma opacum* and *Ambystoma maculatum*). As long as the larvae have not developed their own thymus glands, they are able, by means of some mechanism, to counterbalance the tetanic action of the thymus substance introduced in their food. When, however, the secretion from their own thymus glands is added to the thymus material introduced with the food, this mechanism of preventing tetany becomes inadequate and tetany ensues. If the thymus is the organ by whose action tetany is produced, Uhlenhuth says, we can understand why tetany in human beings occurs far more frequently in children than in adults, since in the latter the thymus gland is replaced, at least to a great extent, by connective tissue. The relation of thymus to tetany may also possibly explain the occurrence of tetany during pregnancy; while the parathyroids of the mother may be sufficient to prevent tetany from her largely atrophied thymus, they may not be sufficient to prevent tetany from the excess of thymus substance furnished by the fetus to the blood of the mother.

82. **Tetany-Producing Substance in Thymus Gland.**—Uhlenhuth believes that the effect of the thymus gland in producing tetany is due to a specific tetany toxin produced by and contained in the thymus, hence the thymus gland must be added to the group of glands for which the function of internal secretion has been demonstrated.

85. **Mechanism of Disinfection and Hemolysis.**—Brooks presents a critical discussion of the part played by the physicochemical process or group of processes leading to death, laking, and similar effects in determining progressive changes in the number of individual cells succumbing in

successive units of time to the action of the deleterious agent. He believes that the course of such processes as hemolysis is very largely dependent on variations in resistance among the different individuals, and secondarily on the course of the fundamental reaction. The fundamental reaction may be either a simple process, or the expression of a complex series of changes whose rate is at all times governed by that of the slowest of the series.

Journal of Nervous and Mental Disease, Lancaster, Pa.

September, 1918, **48**, No. 3

90 *Relation of Tuberculosis to Dementia Praecox. E. E. Southard and M. M. Canavan, Boston.—p. 193.
91 Case of Spina Bifida Occulta in Third Cervical Vertebra. S. N. Clark, Chicago.—p. 201.
92 Pathology of Human and Experimental Poliomyelitis. H. S. Howe, New York.—p. 206.

90. **Relation of Tuberculosis to Dementia Praecox.**—On account of a recent revival of interest in the relation between tuberculosis and dementia praecox, a brief statistical inquiry was made by Southard and Canavan, using data of the Massachusetts necropsy series. It was shown that dementia praecox, found in 8 per cent. of 5,040 Massachusetts necropsies, was far more apt to be terminated by tuberculosis than manic depressive psychosis, occurring in 7 per cent. of the basic series. One hundred and twenty of 403 dementia praecox patients died of tuberculosis, and but forty-three of 339 manic depressive psychosis patients died of tuberculosis. Eighty-seven cases of dementia praecox showed neither death due to tuberculosis or any other anatomic feature whatever (even including adhesions in various parts of the body) which would conceivably be related with tuberculosis. Ninety-five cases of manic depressive psychosis were equally free from tuberculosis.

The question whether these nontuberculous cases of dementia praecox were actually victims of the disease and not subject to erroneous diagnosis was taken up in the statistical study from the Danvers symptom catalog from which thirty-six deaths from tubercle were taken to contrast with twenty-seven deaths without the slightest evidence of tuberculosis whatever. Some of the most characteristic symptoms of dementia praecox were found equally distributed in the two groups and strongly represented in both, so that no major doubt can be raised as to the accuracy of the diagnosis of dementia praecox in the nontuberculous group. For example, the fundamental symptoms of dementia and delusions of paranoid type are found equally represented in both. Nor was it found that the fundamental symptom dementia was more frequently shown in the fatally tuberculous cases than in the others.

Tuberculosis appears to dispose certain cases to catatonia and to hyperkinetic symptoms of a presumably psychogenic or cortical nature. Per contra, the nontuberculous cases showed more instances of the peripheral symptom, motor restlessness, than did the tuberculous cases. Another hypothesis raised by this statistical study is whether tuberculosis does not cause a trend of symptoms in dementia praecox over toward manic depressive psychosis. Does not the superposition of a somatic feature like tuberculosis on the encephalic or psychogenic picture of dementia praecox cause also a superposition of sundry features showing an alliance with those of manic depressive psychosis? Or, does not tuberculosis tend to make dementia praecox look more at times like manic depressive psychosis than dementia praecox is ordinarily likely to look?

Journal of Pharmacology and Experimental Therapeutics, Baltimore

August, 1918, **12**, No. 1

93 *Noninfluence of Rise in Body Temperature Induced by Drugs on Protein Quotient and Leukocytes. F. McC. Hill, San Francisco—p. 1.
94 Detoxifying Action of Sodium Salt on Potassium Salt in Guinea-Pig. S. Amberg and H. F. Helmholz.—p. 19.
95 Acridity of Some Plants Due to Mechanical Action. E. D. Brown and D. D. Anderson, Minneapolis.—p. 37.
96 *Tonus Waves from Sino-Auricular Muscle Preparation of Terrapin as Affected by Epinephrin. C. M. Gruber and C. Markel, Denver.—p. 43.
97 *Tonus Waves in Terrapin Auricles as Affected by Pilocarpin, Atropin and Epinephrin. C. M. Gruber and C. Markel, Denver.—p. 53.

93. **Rise in Body Temperature Induced by Drugs.**—The drugs used by Hill in these experiments were the fluidextract of ergot and a saturated solution of calcium lactate. Fluidextract of ergot in doses of from 1 to 1.5 c.c. per kilogram body weight administered intravenously to rabbits induced a steady rise of body temperature from 1.5 to 2.2 C. Higher doses proved fatal. Calcium lactate in doses of from 5 to 8 c.c. of a 1:20 solution administered intravenously to rabbits caused an initial fall of from 0.4 to 0.6 C. in temperature accompanied in the higher doses by symptoms of calcium poisoning. This was succeeded by a strong rise of from 1.5 to 2.5 and disappearance of the symptoms of poisoning. Higher doses were fatal. In sublethal doses, neither fluidextract of ergot or calcium lactate caused any decisive alteration in the protein quotient or the leukocyte count. These experiments show that the aseptic fever induced by these drugs causes no alteration in the globulin content of the blood nor does any alteration of note occur in the leukocyte count.

96. **Auricular Tonus Waves as Affected by Epinephrin.**—These experiments were performed on the hearts of twenty-seven terrapin immersed in Ringer's solution. Epinephrin caused a disappearance or a diminution in the tonus waves in all hearts. In those experiments in which the strength of the solution was strong the waves ceased almost at once. In those in which a more dilute solution was employed only a few tonus waves appeared after its addition to the Ringer's solution. No oxygen was used during the first mentioned observations, whereas continuous oxygen was employed throughout the second set of experiments.

97. **Auricular Tonus Waves as Affected by Pilocarpin.**—Pilocarpin hydrochlorid was found to have a marked effect on the contractions of the heart, almost completely stopping them, but has no effect on the tonus waves. Atropin sulphate increases the general tonus of the heart when injected into the solution in which the muscle is contracting, either in the normal solution or following the administration of pilocarpin. It has only a slight effect, if any, on the tonus waves increasing them along with the general tonus. Epinephrin chlorid or epinephrin (crystalline epinephrin) cause a disappearance of the tonus waves in the atropinized heart as it does in the normal heart.

Medical Record, New York

Oct. 5, 1918, **94**, No. 14

98 Modern Treatment of Gallstone Disease as Affected and Controlled by Duodenal Intubation. J. C. Hemmeter, Baltimore.—p. 575.
99 Plea for More Systematized Study of Patient's Life Needs. J. S. Doubleday, New York.—p. 583.
100 Internal Use of Radium. D. C. Moriarta, Saratoga Springs.—p. 586.
101 Overflowing Tears (Epiphora) and Its Management. J. A. Kearney, New York.—p. 587.
102 Pyorrhea Alveolaris. M. B. Saunders, Waco, Texas.—p. 589.

New York Medical Journal

Oct. 5, 1918, **108**, No. 14

103 General Diagnostic Study by Internist. L. F. Barker, Baltimore.—p. 577.
104 Recurrent Teratomatous Growth of Trachea. W. Freudenthal, New York.—p. 582.
105 Ten Thousand Wassermann Tests. During 1916 and 1917 in Philadelphia General Hospital. R. C. Rosenberger, Philadelphia.—p. 584.
106 Acidosis. C. D. Waltz, Cleveland.—p. 585.
107 Sarcoma of Brain. H. M. Fisher and A. G. Ellis, Philadelphia.—p. 590.
108 Pilocarpin in Chronic Deafness. C. M. Sautter, New York.—p. 592.
109 Asphyxiation—Respiration—Circulation. P. A. Kane, Chicago.—p. 592.

Surgery, Gynecology and Obstetrics, Chicago

October, 1918, **27**, No. 4

110 *Repair of Large Gaps in Peripheral Nerves by Neuroplasty: Cases. K. A. J. Mackenzie, Portland, Ore.—p. 353.
111 Surgical Considerations of Peripheral Nerve Injuries. B. Stookey, Ann Arbor, Mich.—p. 362.
112 Improvements in Reconstructive Surgery of Head. J. B. Roberts, Philadelphia.—p. 369.

113 Application of Teachings of War Surgery to Civil Hospital Conditions. J. A. Hartwell and E. F. Butler, New York.—p. 377.
114 Preparation of Neutral Solution of Chlorinated Soda from Liquid Chlorin by Gravimetric Method. S. R. Benedict, New York. —p. 386.
115 Reconstruction and Repair of Hepatic and Common Bile Ducts; Implantation of Hepatic Duct into Duodenum. W. F. Fowler, Rochester, N. Y.—p. 387.
116 Congenital Hernia of Diaphragm; Two Cases. W. A. Downes, New York.—p. 393.
117 Intrathoracic Goiter. O. F. Lamson, Seattle.—p. 397.
118 *Fibroid Tumors of Uterus Treated by Radium. H. A. Kelly, Baltimore.—p. 402.
119 Cancer of Rectum. J. M. Lynch, New York.—p. 410.
120 *Practical Method of Foreign Body Localization. A. H. Busby, New York.—p. 413.
121 Inflammatory Neoplasms of Intestine Simulating Malignancy: Cases. N. M. Jones and A. A. Eisenberg, Cleveland.—p. 420.
122 Congenital Polycystic Kidney; Four Cases Occurring in Children of Same Mother. R. E. Wobus, St. Louis.—p. 423.
123 Roentgenologic Aspects of Hour-Glass Stomach. R. D. Carman, Rochester, Minn.—p. 426.
124 *Pulmonary Edema During Pregnancy; Two Cases. K. C. McIlwraith and W. A. Scott, Toronto, Ont.—p. 438.
125 *Temporary Internal Fixation of Compound Fractures. W. L. and C. P. Brown, El Paso, Texas.—p. 440.
126 Method of External Fixation for Fractured Femur. E. L. Eliason, Philadelphia.—p. 443.
127 Late Perforation of Typhoid Ulcer; Laparotomy Under Novocain Anesthesia; Recovery. H. C. Cooney, Princeton, Minn.—p. 447.
128 Army Cystoscopic Table. A. H. Peacock, Camp Lewis, Wash. —p. 447.

110. **Repair of Large Peripheral Nerve Gaps by Neuroplasty.**—The conclusions reached by Mackenzie from the study of three cases are: Regeneration and recovery of function is promoted by the use of nerve flaps. Both central and peripheral flaps can be used for such purposes. A peripheral flap, by laying down a nerve path, may promote regeneration over a great gap; in one case quoted regeneration occurred over a gap 10¾ inches in length. The approximation of nerves and their repair should be done in all cases with the least possible delay. (This would apply as well to cases which are infected as to clean cases.) The arrest of trophic shock can be promoted by early closure of large gaps by flaps. Unimpaired nerve tissue should always be utilized for the effective repair of damaged nerves. In their repair, nerves can be successfully sequestrated in muscular tissue so as to promote their own regeneration and that of the muscles in which they are embedded. The principle of sequestration can be utilized in proper cases so as to avoid infected zones in wounds and also scars and other obstacles to nerve repair.

118. Abstracted in The Journal, June 22, 1918, p. 1976.

120. **Foreign Body Localization.**—The method described by Busby is said to enable the operator to ascertain the depth of foreign bodies in a simple, practical manner, eliminating all mathematical problems, the reading or compilation of charts, at the same time minimizing the technic and thereby removing many possibilities of error. It is not necessary to know the distance of the tube from the patient, nor the distance from the screen to the skin, nor the distance the tube moves on a horizontal plane. Any actual measurement of these factors may be disregarded, yet the correct depth of the foreign body may be read on a scale of millimeters immediately after the operation is completed. This method is based on the fact that the two opposite sides of the parallelogram are equal in distance, one from the other, as described by Barret and Andrault.

124. **Pulmonary Edema During Pregnancy.**—The authors cite two cases of acute pulmonary edema occurring during pregnancy, one at six months and the other at eight months. In both cases the outstanding feature was a tremendously high-blood pressure. In the first case, apart from the urinary findings, there was very little else to be discovered before the onset of the acute symptoms. The second case, had a considerable amount of edema elsewhere in the body, but in the first case this edema was confined to the lungs. In neither case, so far as could be discovered, was there any preexisting cardiac lesion. These patients can hardly be said to be eclamptic because they had no convulsions, nor did they die in coma without convulsions. The condition is interpreted as being due to a profound toxemia giving rise to a high blood pressure which finds its outlet in a spot of weakened resistance in the lung. These cases show that blood pressure findings are the best indications regarding the severity of a given case of preeclamptic toxemia. Moreover, in dealing with albuminuria and high blood pressure during pregnancy one should have in mind not only the possibility of a development of convulsions but also that at any time a complication far more tragic than the ordinary eclampsia may arise.

125. **Temporary Internal Fixation of Fractures.**—The Browns endorse temporary fixation of a fracture, preferably with the Parham-Martin band, or, if not feasible, with a Lane's plate; this fixation to be removed under local anesthesia as a rule at the end of five or six weeks. In cases of compound fractures where interference is otherwise indicated for the control of hemorrhage, removal of foreign bodies, disinfection or coaptation of fragments, they have found nothing to contraindicate the use of internal fixation with the express idea of removing it as soon as there has been sufficient callus and fibrous tissue formed to hold the fragments in apposition. They are unable to see any comparison between this method, where the above procedures are otherwise found necessary, and that of transfixation by means of screws or pegs driven into bones for the purpose of making extension. The internal fixation frequently reduces or solves the problem of extension.

Survey of Head Surgery, Washington, D. C.

October, 1918, **1**, No. 3

129 New Camp Disease of Larynx: Pneumococcus Ulcerative Laryngitis. F. D. Owsley, San Antonio, Texas.—p. 94.

Texas State Journal of Medicine, Fort Worth

September, 1918, **14**, No. 5

130 Anatomic Methods of Approach in Operations on Long Bones of Lower Extremity. J. E. Thompson, Galveston.—p. 188.
131 Reaction Following Blood Transfusion by Sodium Citrate Method. V. C. Hunt, Rochester, Minn.—p. 192.
132 Technic of Supravaginal Hysterectomy. G. V. Brindley, Temple. —p. 195.
133 Study of Pathologic Conditions which Impair Quality, Pitch and Tone in Voice Production. L. H. Lanier, Texarkana.—p. 197.
134 Treatment of Intestinal Amebiasis. H. G. Walcott, Dallas.—p. 199.

FOREIGN

Titles marked with an asterisk (*) are abstracted below. Single case reports and trials of new drugs are usually omitted.

British Medical Journal, London

Sept. 14, 1918, **2**, No. 3011

1 *Differential Diagnosis between Functional and Organic Paraplegia. R. T. Williamson.—p. 275.
2 An In Vitro Method of Demonstrating Return Immigration of Leukocytes in Blood Clots and in Wound Tissues. C. J. Bond. —p. 277.
3 Musculospiral Nerve Disabilities. A. V. Clarke and N. I. Spriggs.—p. 280.
4 Epidemic of Fifty Cases of Influenza Among Personnel of Base Hospital, B. E. F., France. C. J. Martin.—p. 281.
5 Three Cases in Which Laminectomy for Removal of Shell Fragments from Spinal Canal was Performed. C. F. M. Saint.—p. 282.
6 *Value of Flavine. H. M. Savery.—p. 283.
7 Extension Apparatus for Fracture of Femur. D. W. Crile.—p. 284.
8 Six Cases of Ruptured Spleen (All Recovered). R. Jamison. —p. 285.
9 *Operation for Varicose Veins. F. J. Steward.—p. 286.

1. **Diagnosis of Functional and Organic Paraplegia.**—When the diagnosis has been especially difficult, or the symptoms slight and indefinite, the three indications of organic disease which Williamson has found of the greatest service have been the Babinski or Oppenheim reflex, the loss of the Achilles tendon reflex, and the loss of the vibrating sensation, while other forms of sensation are unaffected. The onset of a number of organic affections are: paresis with loss of the Achilles tendon reflex, as in early anterior poliomyelitis—chronic, subacute or acute; paresis with loss of the plantar reflex and loss of the Achilles tendon reflex (in many organic diseases); paresis with double sciatica and loss of the Achilles tendon reflexes, as in early cauda equina lesions;

paresis with loss of the Achilles tendon reflex, loss of the vibrating sensation, and pains in the legs, as in early peripheral neuritis; loss of the vibrating sensation with very slight incoordination and very slight paresis, with or without a Babinski reflex, as in early combined posterolateral degeneration of the cord; paresis, with Babinski reflex (in many organic affections); paresis with loss of the vibrating sensation and Babinski reflex (in the early stages of several organic diseases of the cord); root pains, or root symptoms, followed after a period of weeks or months by paresis, as in meningeal spinal tumor.

6. **Value of Flavine.**—Savery endorses the use of flavine in septic injuries. He points out that a few essential facts must be borne in mind for the use of flavine: 1. In the first place it is imperative that all affected parts should be reached so far as possible, and in order to carry this out thoroughly he always endeavors to introduce flavine solution by means of a hypodermic or dental syringe. 2. The flavine soaked gauze should always be applied as wet as possible and any cavities filled up with the solution immediately before, and the part covered with a piece of mackintosh and wool. 3. A third important feature is the duration of the use of flavine; if applied continuously, a yellowish pellicle will appear on the surface of the wound in the course of a few days. This pellicle appears to be composed of leukocytes and fibrin. The best results from flavine have been obtained from its early application and the appearance of the pellicle is an indication that a change should be made, for example, to eusol, brilliant green, or magnesium sulphate, on the fourth day or thereabouts, and then to revert to flavine once in every three days. This method has given great satisfaction. An enormous amount of sepsis would be prevented by the primary use of flavine, and therefore its use is advocated by Savery in every case septic or likely to become septic.

9. **Operation for Varicose Veins.**—The simpler method of excision is endorsed by Steward as being the most useful operation in these cases. Suitable incisions are made and the veins removed, the cut ends of the main veins and the larger tributaries being ligatured with fine catgut. The incisions are then closed by means of Michel's clips, the limb wrapped in large sterile pads, and a bandage applied evenly and firmly, but not too tightly, from the foot upward.

Edinburgh Medical Journal

September, 1918, **21**, No. 3

10 Acute Intussusception of Colon in Adult. J. M. Graham.—p. 128.
11 Unusual Case of Suicidal Gunshot Wound. B. J. Ryrie.—p. 135.
12 Training of Student of Medicine: Education of Students in Venereal Diseases. L. W. Harrison.—p. 138.
13 Id.: Teaching of Tuberculosis for Undergraduates. R. Philip.—p. 145.
14 Id.: Teaching of Infectious Diseases. C. B. Ker.—p. 151.
15 Id.: Teaching of Surgical Tuberculosis. J. Fraser.—p. 154.
16 Id.: School Education of Girl Candidates for Profession of Medicine. B. Smith.—p. 160.
17 Id.: Relation of School Education to Study of Medicine. J. Alison.—p. 165.
18 Id.: School Curriculum of Boys who Intend to Become Medical Students. C. Stagg.—p. 169.
19 Id.: Science Teaching in Secondary Schools, Especially in Relation to Preliminary Scientific Subjects of Medical Curriculum. M. McC. Fairgrieve.—p. 173.

Journal of Laryngology, Rhinology and Otology, London

September, 1918, **33**, No. 9

20 Pulmonary Collapse, Consequent on Papillomata of Larynx; Unrelieved by Tracheotomy; Death. C. H. McIlraith.—p. 257.
21 Intrinsic Cancer of Larynx and Operation of Laryngofissure. I. Moore.—p. 260. To be continued.

Journal of Tropical Medicine and Hygiene, London

Sept. 2, 1918, **21**, No. 17

22 Paramycetoma. A. J. Chalmers and R. G. Archibald.—p. 177.
23 Obscure Case of Malaria. C. S. Crispin.—p. 179.
24 Passing of Bilharzia Worms in Urine. J. B. Christopherson and J. R. Newlove.—p. 180.

Lancet, London

Sept. 14, 1918, **2**, No. 4959

25 *Prevention and Arrest of Lice-Borne Diseases by New Methods of Disinfection. W. Hunter.—p. 347. To be continued.
26 *Rôle of Scapula in Thoracoplasty. J. E. Adams.—p. 351.
27 *Gunshot Wounds of Knee Joint with Septic Arthritis. A. Neve.—p. 353.
28 Three Plastic Facial Operations. R. Lake.—p. 354.
29 Failure of Treatment of Malaria by Disodoluargol. W. A. Murray and R. W. H. Row.—p. 355.
30 Breast Feeding: Faradisation of Mammary Glands. E. S. Chesser.—p. 356.
31 Natural Science in Education. E. H. Starling.—p. 365.

25. **Disinfection in Lice-Borne Diseases.**—Hunter describes the railway van disinfector devised by Lieut.-Col. G. F. Stammers, F. A. M. C., to meet the needs of disinfection of troops on a larger scale, and to form a part of the British Sanitary Train for Inoculation and Disinfection. The principle of action of the van disinfector is disinfection by current steam, supplied by and directly discharged in greatest volume and force into one or two ordinary railway vans (suitably adapted) by the railway engine, which conveys them along the line to the place most conveniently adjacent to the troops. The cost of adaptation is only $150 to $200, the working of it simple and easy. Each double van is capable, if fully employed, of carrying out disinfections at the rate of 500 kits with 1,000 blankets and 500 overcoats every two hours; of 2,000 kits with 4,000 blankets and 2,000 overcoats in a day of eight hours; of disinfecting over 10,000 kits with 20,000 blankets and 10,000 overcoats in four days; and 18,000 kits with 36,000 blankets and 18,000 overcoats in nine days.

With one disinfector alone Hunter has disinfected the kits and blankets of a hospital with 1,000 beds in four hours; the kits, blankets, and camp bedding of 4,000 prisoners of war in sixteen hours; of 1,500 camel corps men in about twelve hours. Divisions of troops can be dealt with at the following rate: 8,000 men in four days, 15,000 in twelve days (3,800 of these being done in one day); of 16,000 in twelve days; 10,000 in four days, and 18,000 in ten days. As regards ordnance clothing, this can be disinfected, in sackfuls at a time, at the rate of many thousands of articles every two hours, tens of thousands daily, and hundreds of thousands weekly.

A most striking illustration of the advantages of this rapidity was afforded in one instance, where a van disinfector which had just disinfected a division of 18,000 troops in twelve days in one area went off about 500 miles to a center in southern Europe, where some cases of typhus had occurred among the native laborers. It disinfected the whole of the troops and laborers (1,500 in number) in three days, and was back at work again in its former area disinfecting another division on the fourth day.

In the first three months of their work two van disinfectors carried out the disinfection of 170,000 kits, 170,000 overcoats, 340,000 blankets and great masses of ordnance clothing. Since that time the disinfectors in use have been the most prominent and effective measure of preventive work in Egypt, each double van disinfector being capable of carrying out in the simplest and most efficient way in all parts of the war area—up to railhead—disinfection of troops and native laborers to the number of 60,000 men monthly. The total number of disinfections carried out in twelve months (May, 1916, to April, 1917) among a monthly average of 40,000 laborers was 495,000—an average of over 40,000 a month.

26. **Use of Scapula in Thoracoplasty.**—The bone of the scapular body is utilized by Adams to take the place of resected ribs, and its muscles to secure mobilization of the lung and raising of the diaphragm, both essential factors in the healing of these cases.

27. **Treatment of Septic Gunshot Wounds of Knee Joint.**—In the earliest stage of infective traumatic arthritis, Neve says, an attempt should be made by tapping and distending the joint with some antiseptic, such as flavine or iodoform emulsion, to abort the sepsis. This is being successfully done in France. Good fixation of the limb is essential. When sepsis is established thorough drainage is essential; anterior lateral incisions do not suffice; the Peck method is not successful. Suprapatellar, anterolateral, and posterolateral incisions should be used in combination. If there is bone damage excision is desirable in most cases, and the bone surfaces may be kept apart.

Carrel's method offers the only effective way of introducing an antiseptic fluid into the recesses of the injured joint.

With other methods burrowing pus very frequently occurs, with abscesses tracking up and down the limb and septic absorption; and amputation is apt to be performed too late, when the vital powers have succumbed to the prolonged strain and sepsis has become generalized with a perhaps fatal result.

Medical Journal of Australia, Sydney

Aug. 24, 1918, **2**, No. 8

32 Prevention of Disease. F. S. Hone.—p. 153.
33 City Milk Supply: Plea for Pasteurization. E. B. Heffernan.—p. 157.

Medical Journal of Siamese Red Cross, Bangkok, Siam

April, 1918, **1**, No. 1

34 Treatment of Trachoma by Carbonic Snow. H. C. Highet.—p. 16.
35 Treatment of Eight Cases of Concussion Aphasia by General Anesthesia. H. S. Bholaraksha.—p. 29.
36 Severe General Pruritus as a Prodromal Symptom of Human Rabies. L. Robert.—p. 34.
37 Spirochetal Infection of Ulcers. R. W. Mendelson.—p. 43.

Practitioner, London

September, 1918, **101**, No. 3

38 Headaches of Sinus Origin. W. Ibbotson.—p. 121.
39 Recent Public Health Work. J. Priestley.—p. 128.
40 Recent Work on Diseases of Lungs. A. J. Jex-Blake.—p. 135.
41 Tuberculosis Problem. E. Ward.—p. 141.
42 Exercise, Work, Rest and Sleep; Comparison of Sayings in Regard to Their Hygienic and Physical Value, etc. F. P. Weber.—p. 146.
43 *Surgical Treatment of Intussusception. W. H. C. Romanis.—p. 152.
44 Series of Severe Cases of Osteomyelitis. R. A. Walker.—p. 163.
45 *Treatment of Hemophilia. J. D. R. Monro.—p. 167.
46 Large Retropharyngeal Swelling Due to Aneurysm of the External Carotid Artery. G. W. Thomas.—p. 169.
47 Allen Treatment of Diabetes Modified by Administration of Alkalies in Full Doses. T. E. Mulvany.—p. 171.

43. **Surgical Treatment of Intussusception.**—Three hundred and seventy-four cases of intussusception treated by laparotomy at St. Thomas' Hospital during the twenty years from 1898 to 1917, inclusive, are analyzed by Romanis. The total mortality was 121, or 32.3 per cent.; but since 1898 the mortality percentage has been lowered from 48.1 per cent. for the four year period, 1898 to 1902, to 19.2 per cent. for the period 1913 to 1917. There has been a more or less continuous increase in the number of patients operated on, but a steady drop in the mortality; the lowest annual mortality of the series recorded in any year being in 1915, when twenty patients were operated on, with a mortality of 10 per cent. This lowering of the death rate is due to the fact that patients have on the average come to operation earlier; many minor alterations in the technic of abdominal surgery have been, and are still being introduced from time to time.

With regard to intussusception operations in particular, it is only during the last ten years or so that surgeons have come fully to recognize the importance of the time-factor in the case of abdominal sections performed on infants and tiny children, and to realize that every minute saved during the operation of opening the abdomen of a small child increases the chances of its recovery. The harmful effects of general anesthesia in infants has been taken into account, and every effort made either to reduce its duration to a minimum in various ways or better, to substitute spinal anesthesia in its place. It is, therefore, to these three factors, Romanis says, that we must look as offering the most probable explanation of the decided improvement in the results of surgical treatment in these cases, rather than to any supposed diminution in the time that elapses before operation is undertaken.

The different operations performed in this series were as follows: (1) laparotomy and reduction in 301 cases with mortality 26 per cent.; (2) laparotomy, reduction and appendicectomy in thirty cases with mortality 40 per cent.; (3) laparotomy, resection and union in thirty cases with mortality 63.3 per cent.; (4) laparotomy, resection and artificial anus in ten cases with mortality 100 per cent.; (5) laparotomy and lateral anastomosis above and below the tumor in three cases with mortality 33.3 per cent. This bears out the well known fact that if anything more than the simple procedure of opening the abdomen and reducing the invagination is required, the mortality rises by leaps and bounds; but it also shows that irreducible or gangrenous intussusceptions that require anything more severe than simple reduction are, fortunately, comparatively rare, only forty cases of the above series failing to be reduced. In other words, 89.2 per cent. of all cases can be reduced on opening the abdomen.

The important question whether an intussusception will be reducible or not depends almost entirely on the interval that has elapsed between the onset of symptoms and the performance of laparotomy. Of the above cases, in only one case in which operation was performed within twenty-four hours of the onset of symptoms was a resection necessary; of the cases dealt with between twenty-four and twenty-six hours after onset, only two required resection, and of those in which the interval was between thirty-six and forty-eight hours four were irreducible. All the other patients in whom an enterectomy was found necessary had been ill for over forty-eight hours before operation was performed. In dealing, therefore, with an intussusception in which symptoms have been present for less than thirty-six hours, one can feel fairly confident that reduction will be possible.

45. **Treatment of Hemophilia with Emetin.**—Monro records the remarkable result of using emetin in checking the bleeding on one occasion in a case cited. Monro gave one-half grain of emetin hydrochlorid by hypodermic injection in the forearm. The next morning the patient was in a profuse perspiration; he complained of pains in his joints, and his arm was swollen. The urine was scanty and still bloody; the temperature had fallen to 100. The day following his temperature was normal, the joints were better, and he passed normally colored urine—the first for exactly ten weeks. From that time on the patient made a steady recovery.

Bulletin de l'Académie de Médecine, Paris

August 6, 1918, **80**, No. 31

48 *Projectiles in Heart Cavities. R. Le Fort.—p. 147.
49 Lead Poisoning from Crystal Nursing Bottle. Guerbet.—p. 149.
50 *Aviator's Heart. G. Etienne and Lamy.—p. 151.
51 Influenza in Switzerland. J. Renault.—p. 153.

48. **Projectile in Left Ventricle.**—Le Fort demonstrated before the Académie the first case in France in which a scrap of shell (8 by 4 by 4 mm.) was successfully removed from the cavity of the left ventricle. He has previously reported the successful extraction of a projectile from the cavity of the left auricle. This makes the eleventh projectile he has extracted from the heart in a total of nine cases. One of the men succumbed the fourth day thereafter but all the others recovered.

50. **Aviator's Heart.**—Etienne and Lamy report that in the large numbers of aviators they have examined, the left ventricle was found constantly hypertrophied. This hypertrophy was more marked among the aviators doing bombing, etc., that require high flights. It was always moderate and well tolerated, and occurred indiscriminately in those who had or had not been trained in athletics before.

Bulletins de la Société Méd. des Hôpitaux, Paris

June 7, 1918, **42**, No. 20

52 Case of Lethargic Encephalitis at Alger. Ardin-Delteil.—p. 577.
53 Hemorrhagic Spirillosis. Beau, Dide and Ribereau.—p. 582.
54 *Intravenous Arsenic Medication. Sicard and H. Roger.—p. 585.
55 *Walled-Off Meningitis. A. de Verbizier.—p. 586.
56 Meningitis in an Epileptic. A. de Verbizier.—p. 589.
57 Simulation of Mumps. F. Trémolières and L. Caussade.—p. 591.
58 Local Eosinophilia in Dermatitis. Maccia and Petzetakis.—p. 594.

54. **Intensive Treatment of General Paresis.**—Sicard and Roger have been treating general paresis with intravenous injections of an arsphenamin preparation in large doses. In their twelve cases there never was any aggravation of the physical or mental condition. When intoxication from the medication was impending, this was revealed by blistering when the skin was painted with tincture of iodin. Another sign revealing intoxication before it became otherwise apparent was the abolition of the Achilles tendon reflex. This occurred in five of the cases during the second or third month of the intravenous treatment, to a total of 12 or 16 gm. of the drug. There was evidently incipient arsenic neuritis.

55. **Walled-Off Meningitis.**—In the three cases reported, the meningococci disappeared from the spinal fluid although the meningitic symptoms persisted. Then suddenly, after an interval of three or six days, they appeared anew in the lumbar puncture fluid. They did not disappear definitely until after fourteen intraspinal and one intraventricular injection of the serum.

Nourrisson, Paris

September, 1918, **6**, No. 5

59 *Protection of Young Infants. A. B. Marfan.—p. 257.
60 History of Care of Foundlings. R. Flament.—p. 285.
61 Early Vaccination of Infants. R. Wurtz.—p. 294.
62 Extraventricular Hydrocephalus. A. B. Marfan.—p. 297.

59. **Protection of Young Infants.**—Marfan reviews the history of the movements for protection of young infants from ancient Rome to modern times. In conclusion he urges the establishment in crowded parts of the city of an institution where mothers can leave their children during the day in competent hands, with a free restaurant for nursing mothers, a working home for nursing mothers who have no one to support them, a hospital for infants requiring institutional care, and a kitchen for providing food for infants and children, sick or well, and an affiliated dairy and a convalescent home for infants in the country. An institution of this kind would render priceless services to the mothers and medical students as well as to the infants, and through them later to the state. Marfan emphasizes the necessity for all this social service being on the highest plane of efficiency, with a numerous personnel.

Paris Médical

Aug. 10, 1918, **8**, No. 32

63 *Tuberculous Pelvic Peritonitis in Men. J. Duvergey.—p. 117.
64 Passive Mechanotherapy for Sequels of War Wounds. *Guilleminot*, Cistrier and Baudouin.—p. 120.
65 *Persisting Bone Fistulas. R. Bonneau.—p. 124.
66 **Albumin in Hemorrhagic Cerebrospinal Fluid.* L. Boyer.—p. 129.

63. **Tuberculous Pelvic Peritonitis in Young Men.**—Duvergey has encountered several cases of chronic partial occlusion of the bowel in soldiers, with enlargement of the abdomen, febrile periods and loss of flesh. Ordinary palpation of the abdomen gives negative findings. Palpation through the rectum reveals an encysted accumulation of fluid and false membranes filling the small pelvis more or less completely. The compression from the ascitic fluid interferes with bowel and bladder functioning. He cleared out the pelvis through a subumbilical laparotomy, leaving a drain for five or six days. The seven men thus treated seem to be cured completely; the interval since has been two years in some. He warns not to attempt to operate through the rectum on the tumefaction palpated there—the peritonitis should be given the benefit of the laparotomy. This pelviperitonitis is an essentially local and surgical form of tuberculosis.

65. **Treatment of Fistulas.**—Bonneau has charge of a hospital that specializes in treatment of fistulas, and he declares that thorough surgical clearing out of the fistula may be counted on for a cure. In the type of persisting bone fistula leading into a central cavity, with rigid walls, the surgical treatment has always hitherto been inadequate. It is not realized that this central cavity may be irregular in shape, with diverticula or passages reaching for 6, 8 or even 10 cm. The whole cavity, the fistula, itself, and the soft parts around, he says, "are drowned in sclerosis," and the anatomic conditions offer no opportunity for healing and repair even if the cavity is sterilized. The central cavity must be opened up to transform it more into a flat surface; after resection of the rigid tissues, mobilize the normal tissues, muscles, cellular tissue and fat, bringing them as much as possible over the plane surface provided by cutting away a long oval of bone and tissue to expose the central cavity. A head mirror is indispensable, and a strong jet of hot water is useful for washing the cavity clean. There is liable to be considerable hemorrhage unless ample precautions are taken. It may be necessary to sacrifice formidable amounts of sound bone, but this is the price of success. In some cases he had to slice the bone like a sausage over a long segment before sound tissue was reached. The greater the experience, the more generous in sacrificing the bone. The clearing out must be as scrupulously careful as at a mastoid operation. It is sometimes necessary to open up the cavity from the side opposite the fistula, to avoid injuring nerves or vessels, or when the cavity is closer to the surface on that side. It is around this type of fistula, he remarks, that all fistula surgery gravitates. Anything short of absolute thoroughness is bound to fail. He has thus cured men whose fistula had been curetted fourteen times, without curing the lesion, and finally some constitutional disease had been incriminated. Surgeons who practice this thorough *évidement* are unanimous in the optimism of their prognosis, even for fistulas that have been suppurating for two or three years.

66. **Albumin in Cerebrospinal Fluid.**—Boyer refers to hemorrhagic fluid, and says that the proportion of albumin can be estimated by centrifuging and determining the albumin content in the decanted fluid. This removes the red corpuscles. Normal blood averages 5,000,000 or 5,500,000 reds, with about 80 per cent. albumins. The average albumin content of a liter of normal blood, multiplied by the amount of plasma in the specimen of spinal fluid being examined, gives approximately the quantity of soluble proteins from the blood. If 50,000 reds are found in the specimen, then the fraction $\frac{5{,}000{,}000}{50{,}000} = 0.01$ represents the amount of blood in the specimen, and half this, the amount of the plasma present. The albumin in the spinal fluid is thus what is left after subtracting the figure resulting from multiplying 75 or 80 by $\frac{\text{Number of reds}}{5{,}000{,}000 \times 2}$. Of course this method can be applied only with sound reds.

Presse Médicale, Paris

Aug. 15, 1918, **26**, No. 46

67 *Oliguria of Cardiac Origin. O. Josué and M. Parturier.—p. 421.
68 Identification of Meningococcus in Carriers. P. Papin and H. Stévenin.—p. 423.
69 *Test for Blood. Thévenon and Rolland.—p. 425.

67. **Oliguria of Cardiac Origin.**—Josué and Parturier discuss the clinical consequences of oliguria of cardiac origin, especially the retention of nitrogenous waste and retention of water, the latter entailing hydremia and visceral and interstitial edema. The urine with asystole is scanty, rich in urea, but with little chlorids as the latter are retained to make the retained water isotonic. The urea content of the blood is so high from the oliguria alone that it may suggest pathologic conditions in the kidneys when in fact they are still sound. If the heart recuperates and regains its force, the diuresis returns to normal, and the urea content of the blood drops to normal. Treatment should be addressed to the heart. On account of the oliguria, all the symptoms are deceptive, all the laboratory findings misleading. The first task is to get the heart to pumping normally and induce the liberating diuresis. Digitalis and theobromin are useful whether or not the kidneys are pathologic, supplemented possibly by restricting the intake of salt. When the blood is pumped through the vessels with the normal force, there need be no restrictions as to intake of salt in these cases.

69. **Test for Blood in Excreta and Effusions.**—The test described is based on the color reaction given by pyramidon in the presence of an oxidizer. The reagents are (1) a solution of 2.5 gm. pyramidon in 50 c.c. of alcohol (90 degrees), and (2) a solution of 1 c.c. of crystallizable acetic acid in 2 c.c. of distilled water. To 3 or 4 c.c. of unfiltered urine, for example, is added the same volume of the pyramidon solution, and 6 or 8 drops of the acetic acid solution. After agitation, 5 or 6 drops of hydrogen peroxid solution (12 volumes) are added, and the fluid turns at once an intense violet if there is much blood present. The reaction is slower in developing if there is not much blood, reaching its height in fifteen minutes and then retrogressing. The same technic can be applied to fecal matter; a small amount is triturated with 3 or 4 c.c. of distilled water; after decanting, the reagents are applied as above, as also in examination of gastric juice, spinal fluid, pleural effusion, etc. All the tests

made with this technic were controlled with the Meyer phenolphthalein test, and the findings were constantly parallel. The test is therefore as sensitive as the latter, while the technic is simpler and the reagents more durable.

Progrès Médical, Paris

July 13, 1918, **33**, No. 28

70 *General Paresis. H. Damaye.—p. 237.
71 Primary Suture and Early Evacuation. Aimes and Sari.—p. 240.

July 20, 1918, **33**, No. 29

72 *Complications of Vincent's Angina. L. Tixier and Tobé.—p. 245.
73 Cyclic Albuminuria of Malarial Origin. C. Garin.—p. 249.

July 27, 1918, **33**, No. 30

74 *Extraction of Projectiles under Screen Control. Civel.—p. 255.

70. **General Paresis in an Army Psychiatric Center.**—Damaye has encountered in two years 32 cases of general paresis at the center in his charge. There was albuminuria in 11, plus heart disease in 8. In 4 cases shell concussion had brought it on; in 2 other cases a fall or kick by a horse. A number of cases are described in detail; all show the marked improvement that may be realized in the early stages by repose of mind and body, with tonics and mercury later, when the tonics have increased the resisting powers. He insists that dismissal from the military service is imperative, but that the man should be kept for thorough treatment and the family instructed how to continue it at need.

72. **Complications of Vincent's Angina.**—The fusiform bacillus-spirochete infection of mouth and throat may induce eruptions of various kinds, swelling and ulceration in glands in the neck and elsewhere, and all kinds of other septicemic complications, from bronchitis, albuminuria, pericarditis and iritis to congestions in various serous membranes and even pneumonia. Examples of these different types of septicemic complications of Vincent's angina have passed through the hands of Tixier and Tobé. In many instances the complications so outshadowed the "trench mouth" that the connection with the latter had not been suspected. In some cases the ulcerating fusiform-spirochete infection had been overlooked. Treatment has to be local and vigorous, clearing out the ulcerating gums and throat with a 1 per cent. solution of methylene blue or silver nitrate or a weak solution of some arsphenamin preparation. (For treatment see further Campbell and Dyas, The Journal, June 2, 1917, p. 1596.)

74. **Extraction of Projectiles Under Screen Control.**—Civel tells about his work in this line since his first publications on the subject in 1904. By 1916 he had a record of 132 cases in which needles or pins had been extracted by this method and twenty-four foreign bodies in the esophagus, besides many cases of war projectiles. With the screen control it is not necessary to make an incision any larger than is required to admit the instrument for extraction of the foreign body, so that the buttonhole incision under screen control is the main feature of his technic. He claims priority not only for the method but for its application to war projectiles.

Revue Médicale de la Suisse Romande, Geneva

August, 1918, **38**, No. 8

75 *Pernicious Anemia in Young Infants. A. D'Espine.—p. 461.
76 Chronic Amebic Dysentery. F. Wanner.—p. 471.
77 *The Cerebrospinal Fluid with General Paresis. I. Osman.—p. 477.
78 Cure of Gonococcus Hydrarthrosis of Knee under Intravenous Injection of Colloidal Sulphur. C. G. Cumston.—p. 483.
79 *Fat Embolism. T. Nakata.—p. 486.
80 Psychosis in Scarlet Fever in Adult. A. Schlesinger.—p. 489.

75. **Pernicious Anemia in Young Infants.**—D'Espine discusses 2 cases of pernicious anemia in infants of 11 and 5 months from private practice. He has previously published 2 personal cases, and a recent compilation lists 56 cases from the literature. This latter group includes 32 cases in which the anemia was traceable to the bothriocephalus or a tenia. Only 2 cases are known of essential progressive pernicious anemia in older children: A girl of 6 died in six weeks after the first symptoms of the hemorrhagic pernicious anemia, and a boy presented simple anemia for several years. It assumed the pernicious type at the age of 13, and he died two years later. There is no verified case on record of pernicious anemia in young infants, and in the 2 cases reported the infants recovered. In the first case a one-sided diet was incriminated, the pernicious anemia being regarded as, to some extent, an equivalent for scurvy. The other child was breast fed. The clinical picture was that of true pernicious anemia in each case except that there was no leukopenia. The recoveries are ascribed to the special serotherapy used. The serum was obtained by venesection of animals at the height of the regeneration of blood following a previous extensive withdrawal of blood. This "hematopoietic serum" seems to have a decidedly favorable action on the composition of the blood, when injected in cases of pernicious anemia. These infants were given daily subcutaneous injections of 5 or 10 c.c. of the serum. It is the result of the researches of Prof. P. Carnot, mentioned in The Journal, at different times. The changes in the blood count, from hemoglobin 20 per cent. and reds 658,875, to 53 per cent. and 2,102,125 reds in nine months, testify to the efficacy of this form of serotherapy. In the first case the hemoglobin rose from 25 to 75 per cent. in a month.

77. **The Spinal Fluid in General Paresis.**—Osman states that in forty cases of general paresis he found large numbers of cells and usually a high albumin content in the cerebrospinal fluid early in the disease. As the disease progresses, the number of cells grows less.

79. **Fat Embolism.**—Nakata injected olive oil or emulsions of human fat into an artery or vein of rabbits, guinea-pigs and frogs. Comparing the resulting phenomena with his clinical experiences in seven cases of fat embolism, shows that fat embolism does not occur in the general circulation in man, or only to a minimal extent. The fat never accumulates in the greater circulation and it rapidly disappears from the blood. In the pulmonary circulation, on the other hand, the presence of fat in the lung vessels was manifest up to eighteen days. Part of the fat injected into an artery or vein accumulated in the pulmonary vessels and lingered there, but the largest proportion of the fat piled up in the liver. The local force of the general blood stream aids in sweeping the fat along.

Correspondenz-Blatt für Schweizer Aerzte, Basel

Sept. 7, 1918, **48**, No. 36

81 *Rupture of Aorta with Chronic Nephritis. W. Löffler.—p. 1185.
82 *Tardy Intracranial Hemorrhage. V. Demole.—p. 1191.
83 Alveolar Pyorrhea. M. Hausmann.—p. 1197.
84 *Dermographism of the Thorax with Tuberculosis. G. Ichok.—p. 1201.
85 *Significance of Lactic Acid in Stomach. A. Rodella.—p. 1210.

Aug. 24, 1918, **48**, No. 34

86 *Necropsy Findings in Influenza. A. Glaus and Fritzsche.—p. 1121.
87 Powder Treatment of Nose in Prophylaxis of Influenza. A. Schönemann.—p. 1125.
88 *The Appendix and Gynecologic Disease. C. Waegeli.—p. 1127.
89 *Symphysiotomy. Y. de Reynier.—p. 1136.
90 *Dinitrobenzene Poisoning. O. Steiner.—p. 1139.

81. **Rupture of Aorta with Chronic Nephritis.**—Löffler reports two cases in a woman of 38 and a man of 43, the spontaneous rupture occurring during sleep in the latter. The heart was much hypertrophied in both cases. The wall at the point of the rupture was not particularly thin. In the woman it spared the outer coat of the artery and did not induce any symptoms. There are a few such cases on record in which the incomplete rupture healed and proved a necropsy surprise.

82. **Tardy Intracranial Hemorrhage.**—In a fall on the stairs the right occipital bone was fractured, but except for vague headache and weakness the woman of 49 showed no symptoms from the contusion for twenty days. Then slight mental confusion, inattention and forgetfulness attracted attention for a few days, then came delirium and stupor, with right lax hemiplegia and left spastic hemiparesis. Necropsy revealed a large hematoma under the intact dura. It covered parts of the parietal, temporal and frontal lobes—evidently the result of progressive hemorrhage from a small branch of the median meningeal artery, the result of the impact on the other side of the skull at the contusion. The case teaches the necessity for exploratory trephining on both sides. In a recent compilation, five of the twelve patients would undoubtedly have been saved if the opposite side had been trephined when the first trephine gave negative findings.

84. **Dermographism of the Thorax with Pulmonary Tuberculosis.**—In testing ninety-six tuberculous men, Ichok found a positive reaction in 68.9 per cent. of the chronic cases, and only in 5.9 per cent. with more recent infection. In thirty cases of recent pleurisy, a positive reaction was elicited in only one. These findings and his analysis of the literature seem to indicate that the dermographic reaction is an indirect index of the behavior of the musculature, as he explains in detail.

85. **Relations Between Lactic Acid and Hydrochloric Acid in the Stomach.**—Rodella's further research has demonstrated that sterile substances covered with pure concentrated hydrochloric acid, if they are not destroyed, remain sterile. But much infected albuminous substances, in solid form and in not too small fragments, covered with hydrochloric acid, not only fail to become sterile but at body temperature strong fermentation occurs. The products of this fermentation may include lactic acid. This responds positively to the Uffelmann test even in the presence of hydrochloric acid. Neither the lack of hydrochloric acid nor the presence of a tumor and its resulting stagnation are absolutely necessary for the production of lactic acid. It can occur wherever there is retention of stomach content, plus the presence of some substances which bind the hydrochloric acid or which protect the fermentable matter against the action of the hydrochloric acid. When these conditions are realized, lactic acid may be formed abundantly in the stomach even without cancer. Prou reported in 1917 that he had found lactic acid in the fasting stomach in 27 per cent. of 300 cases of nonmalignant stomach disease. He declared that the significance of lactic acid needed revision. Rodella will discuss in a following article the relations between secretion of hydrochloric acid and the production of lactic acid as studied from the clinical and from the bacteriologic standpoints.

86. **Necropsy Findings with "Spanish Influenza."**—Only fifteen were females in the fifty-three fatal cases with necropsy, and in all but thirteen cases the patients were absolutely healthy young people between 19 and 30. The oldest was 59, the youngest a year old child. The women were nearly all pregnant or had heart disease. The fatal complications of the influenza are due to mixed infection with pneumococci, streptococci and staphylococci. No influenza bacilli were found at necropsy, even in cases in which they had been cultivated during life from the sputum and sometimes from the blood.

88. **Relations Between Gynecologic Disease and the Appendix.**—On the basis of 896 laparotomies for gynecologic disease, Waegeli concludes that concomitant appendix disease, found in 16.4 per cent., was secondary to the gynecologic lesion in most of the cases. Lesions were found in the appendix in 75 per cent. of the cases of torsion of a cyst in the right ovary, and in 23.7 per cent. of the cases of right tube or ovary disease, but never with left tube or ovary disease alone. Simple congestion in the appendix with gynecologic disease he warns is not enough ground alone for appendicectomy. On the other hand, he urges systematic investigation of the right tubes and ovaries as a routine measure in all cases of appendicitis. This may reveal its secondary character.

89. **Symphysiotomy.**—Reynier analyzes thirteen cases in which symphysiotomy was done, in nearly all as an emergency measure. It does not seem to be any more serious than a forceps intervention. In two of the cases described in detail the symphysiotomy was done under local anesthesia, and it proved to be speedy and free from complications, allowing the birth of a well developed vigorous child. The local anesthesia rendered the symphysiotomy painless, and the labor pains at the following spontaneous delivery were no greater than at any moderately difficult delivery. The fetus at two preceding pregnancies had been removed by perforation or had died soon after induced premature delivery. The true conjugate was 8.5 and 9 cm. but the pelvis was generally contracted. Symphysiotomy was decided on, and the women allowed to go to term, and the results fulfilled all anticipations.

90. **Dinitrobenzene Poisoning.**—Steiner describes seven cases in munitions workers, and comments on the gray discoloration of the mucous membranes and sometimes of the whole skin. The blood looks gray and thick, but the differential count is normal except that there is excessive destruction of reds. In treatment he found useful inhalation of oxygen, free withdrawal of blood followed by infusion of sodium bicarbonate, with stimulants, and copious drinking of milk. The clothes must be removed from the room, and the whole body, especially the hands and hair, must be thoroughly washed with hot water and soap.

Annali di Ostetricia e Ginecologia, Milan

June, 1917, **19**, No. 6

91 Treatment of Tuberculous Peritonitis in Women. C. Merletti.—p. 201.

July, 1917, **19**, No. 7

92 *Temporary Tubal Sterilization. E. Alfieri.—p. 213.

92. **Operation on Fallopian Tube.**—Alfieri ligates the tube, cuts off the fimbriated end, and pushes the ligated stump into a blind tunnel bored for it in the posterior wall of the uterus, where it is held with two stitches. The procedure is repeated with the other tube, and conception is thus rendered impossible. When the need for preventing conception has passed, the ends of the tubes can be released, and practically normal conditions thus be restored once more. His article is illustrated.

Pediatria, Naples

September, 1918, **26**, No. 9

93 *Malignant Lymphogranuloma. R. Jemma.—p. 513.
94 *Vaccine Therapy of Diplococcus Infections. R. Pastore.—p. 524.
95 Recovery from Tetanus under Serotherapy. Marinucci.—p. 536.

93. **Malignant Lymphogranuloma.**—In both of Jemma's two cases the children of 6 and 11 presented signs of inherited syphilis, and in one the tuberculin test was positive.

94. **Vaccine Therapy of Pneumococcus Infection.**—Pastore applied diplococcus vaccine in eight cases of protracted pneumococcus infectious processes, pyothorax, interstitial pneumonia or migratory pneumonia. Acute pneumonia runs too brief a course for vaccine therapy to display much efficacy, but in these practically chronic cases the pneumococcus lesions in the pleura or the parenchyma of the lung were favorably influenced by this systematic intravenous vaccine therapy. The results were particularly striking in purulent pleurisy. The vaccine seemed to arrest the process and it retrogressed, obviating the necessity for operative measures and even puncture. The little patients were 18 months, 2 and 4, to 9 years old. There was usually a vigorous reaction to the first injection, with a chill, dyspnea and cyanosis but the following injections seldom elicited any appreciable reaction. In others the reaction appeared with the second or third injection, but there were no mishaps of any kind. The vaccine was a suspension of a twenty-four hour culture of Fränkel's diplococcus on a hemoglobinized culture medium. The bacilli were estimated by the opacity of the fluid, and from 0.10 to 0.20 c.c. was used containing from 10,000 to 20,000 of the microbes. Up to eleven injections were made in some of the children.

Policlinico, Rome

July 21, 1918, **25**, No. 29

96 *War Surgery. M. Fasano.—p. 677. Concluded in No. 30, p. 701.
97 *Premature Grey Hair and War Psychopathies. C. Vignolo-Lutati.—p. 680.

July 28, 1918, **25**, No. 30

98 Epidermis Grafts. F. Costa.—p. 707.
99 Apparatus to Facilitate Plaster Treatment of Fractured Leg. E. Cavazzani.—p. 708.
100 Tests of Liver Functioning. G. Sabatini.—p. 709.

96. **War Wounds of Elbow and Knee.**—Fasani describes how his extra conservative management of wounds of the elbow during the first years of the war gave such poor results, both in the stiff joints left and the tedious septic complications, that he finally decided to operate at once in the more serious cases. The results were surprising, the pains and fever subsiding under a light aseptic dressing, and passive movements being begun by the fifth to the eighth day. They

can be done by the man himself, and he soon appreciates the benefit from them. Fasani obtained far better results with wounds of the knee when he restricted intervention to a median longitudinal incision, extending it upward or downward as circumstances indicated. The incision is carried through the patella, dividing it in half, and thus affording ample access to the joint without permanent impairment of its functioning. The simplicity of this technic and its great practical usefulness commend it as the best mode of access to thoroughly explore the joint. When resection is inevitable in a septic focus, he cauterizes profoundly the raw surface to make a barrier between the sound tissue and the septic field in which it lies. By the time the eschar drops off, a layer of granulations keeps up the defensive barrier. He also makes a point of refraining from coaptating the resected stumps, but keeps them apart to ensure better draining and permit medication until the septic process has died out.

A wounded artery should be sutured when possible, but a ligature does not inevitably entail gangrene. Fractioned and consecutive ligation may be permissible sometimes. In one case of a traumatic false aneurysm of the femoral artery, there was tardy hemorrhage on several occasions, and he ligated in turn the femoral and the external iliac at different heights. As the hemorrhages kept recurring, he made a transfusion of blood from the man's 17-year-old brother, and this arrested the tendency to hemorrhages and the man soon recovered. The benefit in this case suggests transfusion as a routine procedure with hemorrhages from pseudo-aneurysms.

97. **Premature Blanching of the Hair.**—Lutati relates that the hair of an artillery captain of 24 turned almost completely white during the two days of the battle on the Piave. A young lieutenant had barely escaped being taken prisoner by the enemy and part of the hair on one side turned white in the course of a day or two. In another case a railroad man of 38, after a bombardment of his train, had all his hair, brows and beard drop out. As they grew again, they came in white, but by the end of eight months the eyebrows and beard had returned to the former chestnut color but the scalp hair was still white. Another soldier noticed a long patch of white hairs on the side of his head the morning after a battle. This white strip was still plain eight months later, when Lutati first saw it. He has witnessed further the premature progressive blanching of the hair in several aviators, and this is not uncommon in men who have spent some months at the advanced front. He regards it as an indication of nervous instability, liable to make trouble later. In connection with these cases personally observed, he cites a number of the classic instances on record.

Riforma Medica, Naples

August 10, 1918, **34**, No. 32

101 *Atrophy of Tumors under Restricted Diet. E. *Centanni*.—p. 626.
102 Successful Resection of Large Arteriovenous Aneurysm of Popliteal Artery. G. Matera.—p. 631.
103 Present Status of Bone Grafting. E. Aievoli.—p. 635.
104 Vocational Training of Disabled Soldiers. E. Levi.—p. 639.
105 Antituberculosis Campaign of Italian Red Cross. A. Botti.—p. 643.

101. **Dietetic Treatment of Cancer.**—Centanni does not hesitate to call his experiments here reported "the most important results accomplished to date in modern cancer research." The idea of dietetic treatment of malignant disease is not new, but hitherto the experiments have been made with a diet which starved all the cells. The consequence was that the normal cells were too weak to contend with the cancer cells, and the malignant disease was merely whipped up by the modified diet. Centanni, on the other hand, sought to modify the diet in such a way that it amply sufficed for the nourishment of all the cells, cancer cells included, but the substances in the diet which promote growth were all carefully excluded, and others added which tend to inhibit growth. Modern research has demonstrated a number of food substances which promote growth—he calls them blastins—and he emphasizes that cancer cells do not differ essentially from normal cells except in their "tumultuous multiplication." By depriving them of those elements in the food the fundamental office of which is to sustain the multiplicative function, auxetics, *Wuchsstoffe* or blastins, and for which the cancer cells display exceptional avidity, the tumor cells languish and die. Among the facts which testify to the correctness of this assumption are Haaland's experiences—confirmed by others—to the effect that gestation prevents successful grafting of tumors and checks the growth of those already implanted. The physiologic growth of the fetus victoriously combats the pathologic growth of the cancer.

In Centanni's research he experimented with ninety-three series of from four to ten mice each. On ordinary food, 100 per cent. of the tumor grafts "took" and some grew to be larger than the body of the mouse to start with. Given the restricted diet ten days beforehand, none of the grafts "took" or only feebly grew. On this diet, tumors already established, up to 2 or 2.5 cm. in diameter, became arrested and were finally reabsorbed without leaving a trace. Large tumors softened and decayed to a friable mass. The most striking results were obtained when the main mass of the tumor was resected and the remainder became reabsorbed as the animals were kept on the blastin-free diet. The growth promoting substances are certain vitamins, certain internal secretions and certain chemical substances. In his experimental diet he took particular pains to exclude the antiscurvy vitamin and nuclein and phosphorus compounds, and denatured the food by heating to 125 or 130 C. The outlook for application of the principle to man is promising, as human beings are particularly sensitive to lack of vitamins, while the size of the cancer in proportion to the whole body is immeasurably smaller than in the experiments related. On the other hand, the results will take much longer to become manifest. The method is harmless, as any disturbances from a dietetic deficiency would be recognized early and could be promptly remedied. Experienced medical supervision would be indispensable.

Tumori, Rome

June-August, 1918, **6**, No. 2

106 *Experimental Glio-Fibro-Endotheliomas. D. B. Roncali.—p. 73. To be continued.
107 *Primary Perithelioma of Ethmoidal Mucosa. G. Basile.—p. 115.
108 *Tissue Growth and Tumor Growth. L. Loeb.—p. 127.

106. **Experimental Endotheliomas.** — Roncali's extensive experimental research with inoculation of the toxic products and the endotoxins of pathogenic blastomycetes has apparently demonstrated that no cells are affected by them except those which are in a specially receptive state, that is, candidates for anaplasia. And among these, only those which have undergone some traumatism at the moment of the injection, and when the antigen has come in direct contact with them. These facts were confirmed by injection into the brain of twelve dogs. Two of the dogs died with symptoms of a focal brain lesion the twenty-fourth and thirtieth day after the injection, and a neoplasm was found at the spot consisting of gliomatous, endothelial and connective tissue, evidently malignant. The article is to be continued.

107. **Primary Perithelioma.**—The pedunculated tumor in the nasal fossa had developed from the perivascular endothelium, the so-called perithelium. It had followed a few months after removal of supposed polyps.

108. **Tissue Growth and Tumor Growth.**—This is a translation of Loeb's article in the *Journal of Cancer Research*, summarized in The Journal, June 9, 1917, p. 1781.

Gaceta de los Hospitales, Mexico, D. F.

June, 1918, **1**, *No. 3*

109 The Mental State in Hysteria. J. T. Rojas.—p. 33. Conc'n.
110 *Immovable Retroversion of the Uterus. R. R. Ojeda.—p. 41. Conclusion.
111 *Autoserotherapy in Ascites. A. Maya.—p. 57.

110. **Vaginal Operation for Retroversion of the Uterus.**—Ojeda describes with eighteen illustrations the various steps for correction through the vagina of immovable retroversion, and gives a brief summary of twenty-six cases in which this colpoperineorrhaphy was successfully applied.

111. **Autoserotherapy in Ascites.**—Maya has only two cases to report, but the influence from the autoserotherapy was prompt and pronounced. The effect seems to be mainly on the diuresis. In both the women the accumulations of fluid seemed to be passed off in this way. The procedure is harm-

less and is certainly worth a trial, he says, in cases of ascites with still sound kidneys. The ascitic fluid obtained by puncture is reinjected into the cellular tissue, without withdrawing the needle. He injected from 2 to 6 c.c. in this way at three or four day intervals, a total of six and thirteen injections in his two cases. The ascites was of six months' and nine years' standing. The first case was in a woman of 60. There has been no return of the ascites during the seven and nine months to date.

Repertorio, Bogota

August, 1918, **9**, No. 11

112 *Medical Education in Colombia. E. Ferrero and others.—p. 565.
113 *Technic for Vaccination against Typhoid. M. Mendez.—p. 585.

112. **Medical Education in Colombia.**—The addresses here given were delivered on the occasion of the inauguration of the new buildings for the medical school, mentioned in THE JOURNAL, recently, p. 1238. The speakers were the minister of public instruction, the secretary of the department of public works, and other state officials, besides the president of the medical faculty.

113. **Vaccination Against Typhoid.**—Mendez expatiates on the great value of antityphoid vaccination which has been applied in Colombia on a large scale. But he protests that it is not necessary for every one to be vaccinated, as some advise. Only those particularly exposed to the disease, such as soldiers and nurses, should be systematically vaccinated. He warns further that all persons should be excluded who have fever, albuminuria or signs of tuberculosis, syphilis or Addison's disease. Suprarenal insufficiency is a particularly important contraindication for antityphoid vaccination, as he demonstrates by the case of an army officer. Severe symptoms followed the third injection of the vaccine, keeping up into the next day: profuse sweating, rapid respiration, livid aspect, complete relaxation of the members, distress and frequent vomiting. The man was so sensitive that he winced at the gentlest movement. The pulse was absolutely imperceptible and the heart sounds scarcely to be heard. The temperature in the axilla was 41 C. and there was complete anuria. These symptoms showed no attenuation by the next day, but then epinephrin was injected and improvement became evident almost at once; by the fourth hour the pulse became perceptible. Recovery was accelerated by injection of a solution of glucose. The injections of epinephrin were kept up for a week, by which time the patient was able to leave his room. This was the only mishap encountered in the course of the vaccinations at Bogota.

Revista dos Cursos, Porto Alegre, Brazil

1918, **4**, No. 4

114 Present Status of Nuclear Ophthalmoplegia. V. de Britto.—p. 3.
115 *Surgery of the Stomach. C. Wallau.—p. 31.
116 *Drainage of Abdominal Cavity. C. Wallau.—p. 45.
117 Vaccine and Serotherapy of Gonorrhea. M. Gomes.—p. 56.
118 Tardy Inherited Phagedenic Syphilis. U. Nonohay.—p. 75.
119 Syringomyelia. G. Vianna.—p. 80.
120 Pituitary Dystrophy. F. Barros.—p. 87.
121 Prepuberal Acute Psychosis. L. Guedes.—p. 104.
122 Chagas' Disease. A. M. da Cunha.—p. 108.
123 Dental Alveolar Polyarthritis. C. Lima.—p. 124.

115-116. **Surgery of Stomach and Abdomen.**—These two articles were the last from Wallau's pen before his recent death. He reviewed his experience with thirty-two operations on the stomach, and discussed the best means for draining ascitic fluid and other collections of fluid in the abdomen. He protested against the too prevalent practice of curetting the uterus, relating instances of serious sequels, and styling it a crime *de lesa natureza*, high treason against Nature. He reiterated that Nature created the abdominal cavity a closed cavity, and that this should be respected to the utmost. In one of his cases the ascitic fluid drained into the scrotum like a hydrocele. This was readily punctured as required, relieving the patient from the tapping of the abdomen. In a second case he intentionally accomplished the same with a trocar, drain tube, and urinal. He adds that this would be the ideal method for draining the abdominal cavity if this persisting permeability of the inguinal canal was the normal condition instead of being a rare anomaly.

Revista Ibero-Americana de Ciencias Medicas, Madrid

July, 1918, **40**, No. 167

124 *Dislocations and Fractures of the Elbow. S. G. Hurtado.—p. 3.
125 *Suprarenal Form of Malaria. C. Fraga.—p. 9.
126 Inorganic Heart Murmurs. A. N. Blasco.—p. 21. Conc'n.
127 *The Diet with Cirrhosis of Liver. R. M. Terol.—p. 29.
128 Manic Depressive Insanity. A. Sanchez-Herrero.—p. 37.

124. **Dislocations and Fractures of the Elbow.**—Hurtado gives some roentgenograms of normal elbows as well as of others with fractures or luxations, showing the differences between the adult and infant elbows in both health and disease.

125. **Suprarenal Form of Malaria.**—Fraga reports from Brazil three cases of a set of symptoms indicating acute insufficiency of the suprarenals, and explained by malarial infection. One of the patients was demonstrated at a meeting of the American Society of Tropical Medicine at New York. Necropsy in one case showed the malaria parasites in the capillaries of the suprarenal cortex. The importance of this suprarenal form of malaria is enhanced by the fact that we have in epinephrin a means to tide the patient past the danger point. In the algid form, artificial serum with epinephrin given by the vein, may complete the triumph of quinin. In the less severe cases opotherapy alone may prove effectual.

127. **Diet with Cirrhosis of Liver.**—Terol advises a milk diet in the early stages of cirrhosis of liver. This leaves the liver comparatively in repose while promoting diuresis. He gives nothing but water the first day except a purge. An adult should take 3 liters of milk during the day, sipping a small amount every one or two hours. The milk should never be taken more than this at a time, as this would distend the stomach, with retention and fermentation with results injurious for the liver cells, and digestive disturbances which impel the abandoning of the milk diet. The milk must never be taken raw, but goat's or asses' milk may be substituted for cow's milk. Fermented milk or condensed milk, etc., should not be used except when the patient wearies of the sterilized milk. This milk diet should be kept up for a month. After this the ordinary diet can be very slowly and gradually resumed, keeping to small meals of easily digestible foods. He advises four meals, the two latest at 5 and 9 p. m., but they should never be abundant. Weak mineral waters are useful, avoiding all carbonated beverages as their gas distends the stomach. Mastication should be especially thorough, and the patient should give both body and mind a rest after eating. General and tonic hygiene should be enforced. In cirrhosis with hypertrophy, there is excessive functioning on the part of the liver, and the diet should aim to reduce production of toxins, being restricted to starchy foods and dry vegetables with little sugar or substances liable to putrefy. In cirrhosis with atrophy, meat should be positively prohibited to ward off production of toxins, and salt should be restricted to 6 gm. a day to guard against ascites and edema.

Mededeelingen van den Burg. Geneesk. Dienst, Batavia

1918, No. 3

129 *Sugar Content of the Blood in the Tropics and Its Importance in Acclimatization. C. D. de Langen and H. Schut.—p. 1; p. 26.
130 *Nature of Acclimatization. Id.—p. 43.
131 *Glycosuria in the Tropics and "Low Fever." *Id.*—p. 62.

129 to 131. **Sugar Content of the Blood and Acclimatization in the Tropics.**—The extensive researches of de Langen and Schut at Java have demonstrated that in both man and animals the sugar content of the blood is from 30 to 75 per cent. higher in the tropics than in Europe. The seventy-five pages of their report are in parallel columns of English and Dutch. On change to a mountain climate (3,800 feet) the sugar content drops, but it returns to its former figure on return to near sea level. They found further that the sugar content of the blood always ran up, about an hour before a malarial chill and fever, and persisted high during the attack, but subsided anew just before the close of the attack. Quinin did not modify the sugar in the blood directly. They recently reported marked differences between the cholesterol content of the blood in the East Indies and in Europe, and they here refer to other findings which suggest that the calcium content

of the blood is unusually low in the tropics. Low calcium content usually pairs with hyperglycemia, and there is much to sustain the assumption that the infrequency of calcium deposits in the tropics in blood vessels or lungs has some connection with the high sugar content of the blood. They insist that the chemical intensity of the light is no greater in the tropics than in Europe, so the heat must be the main factor. It may act on the sympathetic system; this would explain the high sugar content, the low cholesterol content, and various other factors which enter into the process of acclimatization. If we accept this hypothesis of sympathecotony as an important element in acclimatization in the tropics, then it follows that measures to reduce the hypersensitiveness of the sympathetic system are required. Chief among these is the administration of calcium chlorid. With this can be prevented hyperglycemia and hyperthermia in animals given a drug which otherwise promptly sends up the temperature and the proportion of sugar in the blood. When the sugar content of the blood is increasing on arrival in the tropics, higher demands will be made on the kidney filter, and some of the sugar may be cast off in this way—a true renal glycosuria. Another way for the body to get rid of the excess of sugar is by combustion, and de Langen and Schut are convinced that the majority of cases of long persisting "low fever" in persons not acclimated to the tropics can be explained in this way. The "low fever" to which they refer is not a disease; not a single abnormality can be detected. The complaints are the same as with renal diabetes, and both yield to the same measures, namely, change to a cooler climate or administration of calcium. A sea voyage is a sovereign remedy for "low fever," but it has not been tried for renal diabetes, they believe. They emphasize in conclusion that persons inclined to renal glycosuria, the tuberculous, and those displaying sympathecotony, should be warned against settling in tropical regions, at least near sea level. On the other hand, a healed apical tuberculous process in persons of the vagotonic constitution need not be a contraindication to life in the tropics.

Hygiea, Stockholm

July 31, 1918, **80**, No. 14

132 *Fasting Treatment of Diabetes. P. Arnell.—p. 817.
133 Chylothorax in Tuberculous Boy. A. Gullbring.—p. 840.

132. **Starvation Treatment of Diabetes.**—Arnell's patient was an engineer of 50 who had had four attacks of diabetic coma within a year. Under the influence of prolonged fasting for four days and restriction of fat, the acidosis subsided, the sugar disappeared from the urine and slight tolerance for carbohydrates was regained.

Svenska Läkaresällskapets Handlingar, Stockholm

June 30, 1918, **44**, No. 2

134 *Spondylitis Deformans. G. Kahlmeter.—p. 169-405.

134. **Deforming Spondylitis.**—Kahlmeter was assistant for two years at an asylum for the aged and incurable, and he examined with the roentgen rays every inmate that presented the slightest stiffness or pain in spine or hip joint. There were twenty-three typical cases of deforming ostearthritis of the spine, and he further examined with the roentgen ray thirty-four cases at other institutions, and studied the roentgeonograms taken for other purposes in 1,056 persons. The necropsy findings are shown in two colored plates, with fifty-six roentgenograms. Every one in two or three of the elderly presented the characteristic lesions, but they were extremely rare under 40. Four times more men were affected than women. The stiffness and pains do not seem to be associated with these processes, but to be the result of the weakening of the spine which always inaugurates the deforming osteoarthritis. The symptoms from this insufficiency of the spine may precede any pathologic anatomic changes. On the other hand, the characteristic pathologic anatomic changes may in time correct the insufficiency of the spine, and then there will be no further pain. He emphasizes that the process does not spread over much of the spine, and that the disturbances are remittent, so that the earning capacity may be only periodically impaired.

Treatment addressed to the stiffness and pains may include baths, massage, passive exercises, application of heat, revulsion to the skin and other antineuralgic measures. He found bed rest and local heat to the part of the spine involved the most effectual of all symptomatic measures. He explains the pathogenesis as the consequences of the displacement of the weight-bearing balance of the spine on account of some disproportion between the weight to be borne and the weight-bearing power. This assumption suggests the necessity for measures to restore the normal balance in the spine. This would not only relieve the subjective disturbances but it might arrest the further progress of the disease or prevent the development of the characteristic pathologic process. It can be accomplished by reducing the weight to be borne, or by strengthening the supports, especially the muscles that sustain the spine. Massage and gymnastics are useful for this. The strain on the spine may be reduced by change of occupation if it compels carrying heavy articles or bending over, or by reducing the body weight in case of a tendency to obesity (some of the clinical cases reported show the marked benefit from measures of this kind taken unconsciously), or supporting corsets may be worn. One of his patients was materially relieved by a leather corset. He was able to resume his work as a carpenter for a year and a half to date, free from all disturbances, but they return whenever he discards the corset.

Ugeskrift for Læger, Copenhagen

Aug. 8, 1918, **80**, No. 32

135 *Hematoma Impedes Delivery. E. Petersen and A. Tofte.—p. 1253.
136 Historical Sketch of "Cerebral Otorrhea." J. Møller.—p. 1264.

Aug. 15, 1918, **80**, No. 33

137 *The Abdominal Walls with Gynecologic Disease. S. A. Gammeltoft and G. Wiltrup.—p. 1291.
138 *Croupous Pneumonia. C. Lundsgaard.—p. 1308.
139 *Calomel in Treatment of Pruritus Ani. O. Hamburger.—p. 1316.

135. **Hematoma Impeding Delivery.**—Petersen and Tofte report four recent cases of a hematoma developing in the vulva or vagina in the course of a childbirth and preventing its completion. It was necessary to incise the hematoma and, after the child had been delivered, ligate the bleeding vessel when it could be found, suturing the incision to fully obliterate the cavity.

137. **Changes in Abdominal Walls with Mild Gynecologic Disease.**—Gammeltoft and a massage specialist call attention to the patch of tenderness in the abdominal walls that may sometimes be the only sign of latent disease below. They give the details of seventeen instructive cases of the kind. Palpation of the abdominal walls revealed changes in the subcutaneous tissue or the muscles, and by massaging at these points conditions returned to normal both in the abdominal wall and below. It is indispensable to palpate the abdominal wall itself in examining for disease in the internal genitals. If tender spots or palpable lesions are found, this shows the points where massage or other measures should be applied, and with this the patient's symptoms may subside completely. It is possible that the innervation of the tender patch is by a branch of the same nerve innervating the diseased area below, and the superficial tenderness is induced by reflex action from the lesion beneath. This persists after the deep lesion has completely retrogressed.

138. **Pneumonia.**—Lundsgaard describes the research and the clinical experiences at the Rockefeller Institute Hospital at New York, during his fourteen months of work there. He adds that croupous pneumonia seems to be less prevalent in Denmark and less fatal than in New York. The death rate at Copenhagen averages from 18.3 to 25.9 per cent. but it was only 13.1 per cent. for children between 5 and 15, and 20 per cent. between 15 and 65. Above this age it averaged 68 per cent.

139. **Calomel for Pruritus Ani.**—Hamburger states that several physicians have expressed their gratitude for the relief from long standing pruritus ani by his method of rubbing dry calomel into the parts. When the calomel is rubbed in well it sticks till the next day. In salve form, he reiterates, it cannot be counted on for such effectual service.

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ETIOLOGY AND TREATMENT OF PRURITUS ANI

SUMMARY OF EIGHT YEARS' ORIGINAL RESEARCH WORK[*]

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With the exception of cancer, there is probably no disease that afflicts mankind the etiology of which has been so little understood as pruritus ani, vulvae and scroti. I might say that few other diseases have baffled the profession in its efforts to relieve patients as seriously as this.

In every book that contains a chapter on the subject, it is asserted that nearly every disease to which flesh is heir is a cause of pruritus ani, yet the recovery from the original diseases has left them with the same old pruritus. It would seem, therefore, that the profession might have formed a logical conclusion, eliminating nearly all of the so-called causes of pruritus ani, when it was seen that it continued after the disappearance of the various diseases that were supposed to have caused it.

For many years when the American Proctologic Society held its annual meetings, the members asked each other if there was anything new as to the etiology or successful treatment of pruritus ani and the answers were always along the line of continued speculation as to the causes, and empiricisms for treatment, with negative results.

For a number of years I investigated various conditions that I thought were causes, only to find that my theories, when fully tested, were not tenable. In the summer of 1910, an unusual circumstance led me on a line of investigation different from any I had ever followed, which had a bacterial origin in view. I made cultures of the anal skin with the thought that if any bacteria were constantly or nearly constantly present, this might be a step toward a better understanding. My associates and I found that in the first four cases, the patients had *Streptococcus fecalis* as the only constant organism.

After serious consideration I decided to have an autogenous vaccine made from *Streptococcus fecalis* and test these four cases with it. Meanwhile, other patients with pruritus ani came and the cultures in every one showed *Streptococcus fecalis* as the only constant bacteria present.

During the year, definite improvement in these cases, with the use of autogenous vaccine, was noted. In fact, I was at first dumfounded that we should get such good results, but this was before I had sufficient experience in the work to reason out cause and effect, while today from my past clinical experience, it is not difficult to understand the reasons.

In the cases of patients that came to me before this discovery, I had made an abject failure to bring about any real improvement from either treatment or operation. In fact, I had become so pessimistic as to results of treatment or operation that when these patients came, I frankly admitted to them that I had never been able to give benefit, and either tried to send them to some other physician, or discourgae them so that they would voluntarily excuse me.

BACTERIOLOGIC EXAMINATIONS

Our bacteriologic reports show that a skin infection is the cause and when we know that the common symptoms both subjective and objective are almost identical in all cases, this alone gives strong support to the bacteriologic etiology.

The first side investigation that followed was an examination of the blood to determine its phagocytic power against these bacteria. In every patient examined the coefficient of extinction of opsonins for *Streptococcus fecalis* was low, while in patients who had other rectal diseases, without pruritus, it was normal. We found that when the phagocytic power increased, by the use of autogenous vaccine, the itching ceased proportionately, the improvement as a rule being manifested by less frequent attacks and a lessened intensity of the itching. As they improved, many patients said that if itching began they could rub or scratch the parts with relief, the same as when itching occurred on any other part of the body, instead of being compelled to dig at the parts until they were sore and bleeding, as had formerly been necessary.

Textbooks written by some of the ablest men give as causes of pruritus ani all dietetic faults as well as all local pathology of the anal canal. In order to prove whether these claims were true, I examined the history and pathology of 900 consecutive rectal cases from my own records and found that only ninety-four patients had complained of pruritus ani. A year later, Dr. T. Chittenden Hill of Boston made a similar investigation of 3,000 rectal cases treated in the Boston City Dispensary and taken from his own private records. He reported 320 cases of pruritus ani among them, which is the same percentage I found. This of itself is strong evidence that pathologic conditions in the anal canal cannot be the etiology of pruritus ani. If so, we should have far more than 10 per cent. of the cases in all rectal pathology.

Of the patients examined that had pruritus ani I found that 50 were constipated, 5.5 per cent. of the

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[*] Read before the Section on Gastro-Enterology and Proctology at the Sixty-Ninth Annual Session of the American Medical Association, Chicago, June, 1918

900 patients examined; 21 had hemorrhoids, 2.3 per cent.; 20 had ulcers, 2.2 per cent.; 23 had diseased crypts, 2.5 per cent.; 12 had hypertrophied papillae, 1.3 per cent.; 3 had polypi, 0.03 per cent., and 3 had fistula, 0.03 per cent. The skin of 15 was pigmented, 1.7 per cent., and 68 had excess of moisture, maceration and skin fissures, or 7.5 per cent.

ETIOLOGY

It seems to me that my records prove that none of these diseased conditions may be properly classed as causative of pruritus ani, but when present are coincidental. My case records show that there is no other rectal pathology of any account, etiologically, in 90 per cent. of the pruritus ani cases.

We have abundant proof that food has nothing to do with the etiology, though some foods may provoke attacks of itching and the patients may improve under vaccine treatment just the same, whether they are on a full mixed diet or not.

Cases of pruritus ani, complicated with fistula having a pus discharge on the anal skin, have been relieved by autogenous vaccine treatment while the fistula was still discharging, and I have found that when rectal pathology is present with pruritus ani, an operation for its radical cure does not relieve the itching for more than a few weeks, if the streptococcic infection is present.

In other patients having rectal pathologic condition and itching, but without streptococcic infection of the anal skin, an operation for the cure of the rectal pathologic condition permanently relieved the pruritus. Only two cases of this kind have occurred in our series of 185 cases, while at least a dozen patients have relapsed as to the pruritus ani when operated on with the infection present.

It has been demonstrated to my satisfaction that operations do not cure pruritus ani when skin infection is present. Some surgeons make the assertion that operations cure pruritus ani, but I find that after the patients have been operated on, they are free from itching for a few weeks at most, when it returns with increased severity.

Two of the conclusions in my third annual report were as follows:

> The presence of skin infection with a local lesion begets an unfavorable prognosis for the cure of pruritus ani as a result of operative procedure, and, the absence of demonstrable skin infection with pruitus ani, in the presence of a local lesion, will justify making a favorable prognosis for the cure of the pruritus as a result of operative procedure.

Pruritus ani rarely, if ever, extends above the white line of Hilton. This is another proof that pathologic conditions in the anal canal are not a basic cause. The pruritus of diabetics is not in any way connected with bacteriologic pruritus ani, except as a coincidence. Many textbooks state, and the majority of the medical profession believe, that the moisture present in these cases is due to mucus that leaks through the sphincter on the anal skin.

If you examine the skin through a magnifying glass you can see the moisture collecting on the diseased skin, but you cannot see it on the normal contiguous skin. Experience has proved that the moisture is a result of the low grade inflammation of the skin, caused by the infection, and never comes from inside the anal canal unless there is a patulous anus, and even then it is not the same kind as the skin exudate. This is usually caused by some ambitious surgeon who thinks he can cure the pruritus by doing a Whitehead operation, "Ball's operation," divulsing the sphincter muscle, or some other equally inefficacious procedure.

The statement that pruritus ani is the result of skin infection has led some to misinterpret its full meaning, that is, to believe that the bacteria affect only the *surface of the skin*, and to apply a local treatment that is of little effect or that may be a positive damage to the patient.

To illustrate this, I quote from Mummery's[1] last book in which he states he has tried the autogenous vaccine treatment in several cases with a certain amount of success. He then says:

> It seems to me, however, that if the streptococcic infection of the skin which is undoubtedly present on testing in many of these cases, is the cause of the itching, the best method of getting rid of the infection is direct local application rather than the use of autogenous vaccine. We are not in the habit of using autogenous vaccine to sterilize a patient's skin before operating as we have other and more effectual methods.

TREATMENT

He describes a local treatment by a 2 per cent. solution of iodin in a 75 per cent. rectified spirit, which he drives into the tissue by cataphoresis. This indicates that Mummery overlooked the crucial point of the discovery, that is, that the coefficient of extinction of opsonins in all pruritus ani cases is low for the infective bacteria and that they are found in the skin as well as on its surface; therefore any local treatment that does not increase the phagocytic power of the blood against these germs can have only a very temporary effect. Many physicians are of the opinion that the skin fissures are caused only by the finger nails. If this were true, the parts would not show so many common characteristics, but instead, distinct markings of the finger nails that would not be quite the same in all cases as we now find them.

Other local applications have been used with the same idea in mind and with similar results, such as treatment by the roentgen ray, radium, and other applications that could kill the germs in situ. I have cared for some patients on whom the roentgen ray had been applied to the extent of local burning and sloughing. The pruritus did not improve, but was made materially worse, *notwithstanding* the burning of the tissues which certainly must have killed the germs then present, but it did not increase the systemic resistance to infection.

The loss in skin pigmentation is a result of the maceration and the bacterial action on the skin. The bacterial infection takes the elasticity out of the skin so that it is like parchment, easily fissured, and the fissures nearly always follow the direction of the skin folds. In severe cases of long standing the skin will break with slight straining much the same as old rubber. The elasticity and resilience have been destroyed by the action of the bacteria and the resultant inflammatory process. With autogenous streptococcus vaccine treatment the phagocytic power is raised, then the excessive itching, moisture and skin fissures gradually disappear, pigmentation returns and the skin seems to resume its elasticity.

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[1] Mummery: Diseases of the Rectum, New York, William Wood & Co., 1914, p. 241.

Last year I directed the treatment of a New York physician. He had been treated with roentgen ray; the skin about the anus and the abdomen as far as the umbilicus was burned so that he had extensive sloughs. The pruritus and this treatment had incapacitated him for a considerable time and caused the most intense suffering. When healing began, the itching returned with increased intensity. It was at this time that I was appealed to and advised autogenous vaccine.

After a few weeks' treatment I received a letter from him, the conclusion of which I quote:

> Sept. 18, 1917. In conclusion I can report definite improvement in the intensity and frequency of the pruritus. As I am now back on duty we shall be able to judge how matters stand during the exactions and activity of the daily routine work.

Nov. 7, 1917, a report came from his physicians saying, "Dr. —— is fine."

I have now examined 181 cases of pruritus ani bacteriologically and have found *Streptococcus fecalis* as the common germ in 168 of them. Of the thirteen in which *Streptococcus fecalis* was not demonstrated, twelve had only one or two cultures taken and the thirteenth case, an acute one, developed an abscess in the perineum and had no more itching after this was operated on. It is therefore not at all certain that these twelve patients are not infected, because, in a considerable number, *Streptococcus fecalis* was not found until as many as eight or nine cultures had been taken. Therefore the bacteriologic results of these twelve negative cases cannot be considered final.

The reason I did not find *Streptococcus fecalis* in the twelve was probably because the mediums were not properly made. Sometimes the plates are overgrown with other bacteria that choke out *Streptococcus fecalis.*

I have treated 113 of the 181 patients, and distinct relief was obtained in ninety-nine of them. Some of those in whom the greatest relief was experienced were among those with the most distressing cases. Thirteen of them received little or no benefit, but only four of the thirteen received a sufficient number of treatments, so that they should have had relief, according to our experience with the others. Two of the four had the worst vulvar involvement of any I have ever seen, while a third one of the four had a complicating eczema.

The other nine had only a few treatments each, became discouraged and discontinued treatments. They expected too much.

METHOD OF TAKING CULTURES AND APPLICATION

I shall give in an abbreviated way the method of taking cultures and the treatment used. The anal skin should be carefully washed with a weak soap and water solution and rinsed with plain sterile water. No alcohol or other drug is used. A sterile swab is then rubbed on the cleansed anal skin, especially over any skin fissures that exist.

The isolation of *Streptococcus fecalis* is accomplished as follows: The swabs received are gently but firmly rubbed over the surface of solidified standard beef infusion agar in Petri dishes. The agar should have an acidity of 0.5 to phenolphthalein.

The small clear colonies of *Streptococcus fecalis* are readily distinguished from the larger colonies of *Bacillus coli, Staphylococcus albus* and other bacteria encountered in such cultures.

The small colonies of *Streptococcus fecalis* are subcultured on slants of the same kind of agar as that used for isolation.

As a rule, the growth is rapid and luxuriant and a few tubes suffice for the amount of bacterial vaccine desired. However, some strains are encountered that are grown with difficulty.

The bacteria should be killed either by 0.5 per cent. phenol (carbolic acid) solution or a 0.33⅓ per cent. tricresol solution. Heat should not be used.

After the vaccine is proved sterile, it is ready for use and should be kept in a sealed bottle in a cool place. At the time of using, the vaccine should be thoroughly shaken in order that the dead bacteria may be evenly distributed in the dose given.

I begin the dosage with 3 minims, injected into the buttock close under the skin, not into the muscle. The first three or four doses are repeated at intervals of two days, increasing from 3 to 5 minims each treatment, unless a severe reaction is caused by the previous dose. The number of minims at each treatment may then be increased as much as the judgment of the operator dictates. The results will be obtained in most of the cases just as well without local applications of antipruritics except for the temporary relief obtained.

RESULTS

I never promise permanent relief, and do not think it is advisable to do so, no matter how favorably the case progresses, because I have never found what it is that primarily lowers the phagocytic power of the blood so that the original infection occurs. Therefore, if the same condition that originally lowered the resistance remains and again reduces the phagocytic power, conditions favorable for reinfection will be present. If this occurs, the patient must take another course of vaccine treatment to bring the phagocytic power back to normal.

My records show that a majority of the patients who have taken this treatment with favorable results have never relapsed to as severe pruritus as they originally had, and I look on this as a physiologic endorsement of the claims put forth for both the eitology and the treatment.

This was emphasized recently in Case 1 of our series, when the patient (now living in California) came into my office. He reported that he had very little itching at any time and if it did come on, it was easily controlled. This patient had twenty-seven treatments, the last of which was administered five years ago.

A fair question and one frequently asked is: Why is one person afflicted by pruritus ani and another free from it, since the same bacteria are found in the feces of both? We find that the resisting power against these bacteria is below par in the patient afflicted so that the soil in his case is ready while the other has the normal phagocytic power and resists the infection.

POSSIBLE PREVENTIVE MEASURES

The usual method of cleansing after a stool is by using dry paper as a detergent, with which it is impossible to cleanse thoroughly. You can easily demonstrate this by using a moist cloth after you are supposed to be thoroughly cleansed with paper, a method that leaves the fecal matter on the skin between the nates. This skin is an efficient incubator at a proper temperature with just enough moisture for the rapid growth of bacteria, and on account of being kept in contact with the parts, affords an opportunity for them to find a home in the skin. If there is any possibility of prevention it must be along the line of cleanliness after defecation, as outlined. In women, for prevention of pruritus vulvae, the cleansing should be from the front backward. This is seemingly such an unimportant matter that some may think it unnecessary. I believe that this manner of cleansing would also repay many women by the prevention of a *B. coli* cystitis.

CONCLUSIONS

1. From the data presented by this series of cases, I feel justified in saying that pruritus ani is caused by an infection made by one of the streptococci group, or associated with it. This infection may be the primary, secondary, or aggravating cause. If it is the secondary or the aggravating cause, the primary may already have passed away.
2. Whether the infection occurs because the opsonins for streptococci are low or whether the opsonins are lessened because of the invading organism is not yet known.
3. Statistics of 4,000 distinctly rectal cases show that 414 (about 10 per cent.) had pruritus ani. This is good evidence that, when rectal disease and pruritus ani occur together, it is only a coincidence. When there is pus or other discharge on the skin about the anus, pruritus ani does not often exist unless there is a skin infection.
4. Pruritus vulvae and pruritus scroti are also proved to be skin infections.
5. Pruritus ani rarely extends above the white line of Hilton.
6. The sphincter muscle does not allow leakage of mucus on the anal skin in one who has pruritus ani unless there is a patulous anus, any more than it does in a patient with a normal sphincter muscle who has no pruritus.
7. The skin moisture is produced locally and is due to the low-grade inflammation of the infected skin.
8. The presence or absence of bacterial infection is of great prognostic value if operative work is expected to cure.
9. Pruritus ani will not be improved unless the phagocytic power of the blood is increased, and the pruritus will return if the phagocytic power of the blood is again lowered enough to allow a reinfection.
10. A complicating infection may be present.
11. Pruritus ani, pruritus vulvae or pruritus scroti are not a part of a diabetic condition. When they occur with general pruritus, it is a coincidence.
12. The only possible method of prevention lies in bathing the anal skin after each defecation.

ABSTRACT OF DISCUSSION

Dr. J. M. Frick, Toledo, Ohio: My own experience in the treatment of pruritis ani with autogenous vaccine began five years ago. Great care must be taken in selecting the case as one of true pruritis ani. It is not at all infrequent for an eczema marginatum or some skin infection to be referred to as a pruritis ani, which, of course, would not respond to true pruritic treatment. Among 4,700 candidates for selective service I found pruritis ani to be the most frequent proctologic disease. I have complete records of forty-three private cases. All these patients exhibited the typical skin changes. Twenty-five exhibited no other coincidental pathology; eight exhibited other coincidental pathology; ten had been operated on previously for coincidental pathology, with the theory of producing a cure of the pruritus. Forty were sent to the same laboratory for cultures. Three were treated with autogenous or stock vaccines. Of the forty cultures thirty-eight were positive. One culture was a pure colon bacillus, one a mixed streptococcus culture.

Dr. Dwight H. Murray, Syracuse, N. Y.: How many cultures were taken of those cases?

Dr. Frick: We take only one culture. It is not necessary to get more than one culture. Four patients did not return for treatment, leaving thirty-six treated with the autogenous vaccines and three treated with stock vaccine. Of the thirty-nine treated, thirty-seven have been discharged as cured. Four of these have remained cured for a period of four years. One patient received no benefit, or reported no benefit. One patient was insufficiently treated, owing to moving out of town. Three cases recurred; two cases recurred after a period of one year, and one case recurred in six months. One of the former, and the latter case, are now under treatment. One of the first cases that recurred was a case treated with stock vaccines. Later we had a culture taken and an autogenous vaccine made, and that patient is now doing very nicely. The two remaining cases treated with stock vaccine have remained cured.

Our culture medium differs somewhat from the technic used by Dr. Murray. We have used from the beginning of our work the ascitic fluid of Rosenow.

Dr. E. Eliot Harris, New York: I would like to ask Dr. Murray how often he repeats the injections; also the interval between them, and, further, if he could tell us the strength of the solution he uses and the number of bacteria in each injection.

Dr. J. M. Rector, Columbus, Ohio: I should like to have either Dr. Murray or Dr. Frick tell us something more about the culture. Dr. Frick spoke of Rosenow's agar, and I wish he would tell us something more about that.

Dr. J. M. Frick, Toledo, Ohio: The area is prepared first by soap and water, flushed off with sterile water and dried with a sterile gauze. Remember, the infection is deep, not superficial. We remove the surface just as you would in the ordinary vaccination, without drawing blood, taking the culture on the platinum needle and placing it in the ascitic agar of Rosenow.

Dr. James A. Duncan, Toledo, Ohio: I have had only a limited experience following the method of Dr. Murray. There were nineteen cases in all; seventeen of the nineteen were what we called cured, and cured permanently, we hope, while two were cases in which there was no benefit to the patient. In one case the skin had been washed with alcohol instead of soap and water, which I believe to be the cause of the failure. The other case was one in which I did not curet deep enough. Following that I have had no failures.

Dr. Thomas Charles Martin, Washington, D. C.: We have heard only one side of the question. I believe it is not claimed by Dr. Murray or his exponents of this method that they get 100 per cent. cure by the Murray method.

Dr. Murray: That has never been claimed.

Dr. Martin: And is it not also a fact that in nearly all the reports of cases of treatment of pruritis ani by this method other means have also been employed in the treatment of these patients?

Dr. Murray: You mean at the same time?

Dr. Martin: Yes.

Dr. Murray: Very rarely.

Dr. Martin: I asked that question because I thought the answer would be somewhat different. It is a part of parliamentary practice, of course, to exercise that kind of caution. My reason for anticipating that Dr. Murray's statement would not be what it is is the fact that I have not seen the more recent of his papers; but the early case reports I remember also mentioned other means of treatment as being applied. It was very proper to do so because those methods had yielded good results. However, from the scientific viewpoint, such reports tended to confuse the mind as to on what depended the result. Dr. Murray has not only talked to you about the autogenous or vaccine treatment of pruritus, but he condemned another method of procedure, a method of procedure which, if employed by hands equally skilled as those which applied this method of vaccine treatment, does yield 100 per cent. of cures. I refer to surgical intervention. The operation is termed the Ball operation. It consists in dividing the cutaneous nerves that supply the circumanal skin. The operation consisted in making an incision on either side of the anus, going through the skin, cutting off the nerves in the loose connective tissue between the skin and deeper structures. For many reasons that method of incision was not very satisfactory mechanically. Later, Dr. Krause of Cincinnati and I designed an operation requiring no suture. This technic has not been published. I make an anterior and posterior incision and cut the nerves supplying the skin. Dr. Murray makes the statement that Ball's operation or any modification of it is to be condemned as useless, often leaving the patient worse than before. I do not condemn Dr. Murray's method of treatment of pruritus ani. But until this time I have yet to be persuaded that it is as dependable a method of procedure, or as positive in its effects, as the surgical operation.

Dr. Anthony Bassler, New York: The doctor's case cited by Dr. Murray is the ninth case that I have had to do with that has been treated thoroughly, all of the patients having gotten well except one, and that one is very distinctly improved, but having to use some local means about every six months or a year.

Dr. Dwight Henderson Murray, Syracuse, N. Y.: So far as I know, Dr. Martin is the only man who has ever had 100 per cent. cures in pruritus ani from operative procedure. I have seen many cases of pruritus ani in which operation has been performed in the hope of a cure, and the story was always the same. They were free for a little while, just the same as the patients on whom I have operated, but the pruritus returned. I used the autogenous vaccines with great lasting benefit. I have never yet said that I cured a case of any kind. I do not believe it is the province of any physician to claim that he cures his patients. Possibly they get well in spite of him, and he should not take unto himself all of the credit that Nature ought to have. In all the papers that I have written on this subject I have only given the facts as I have found them. I have not said that autogenous vaccine cures any patient. The primary claim that I make is that we have found the etiology. I believe this to be a great step in advance.

In all of my papers I have asked the profession to cooperate with me to find some better treatment, something that will stop the itching for all time, that will enable us to say definitely that the itching will cease at a definite time. I have urged the profession to help, and I will welcome all improvements on present methods that will assure patients a hundred per cent. cure. I do not see how Ball's operation could benefit pruritus scroti, complicated with pruritus ani.

In answer to Dr. Harris' question, I usually begin with 3 minims, and as near as possible the standard strength of vaccine, 2 billions of dead germs per cubic centimeter; the second dose is double the amount, the third dose 3 or 4 minims increase over the last. The dose is increased each time until a strong reaction is produced. The first improvement noted is a less frequent and less intense itching.

Dr. Harris: How frequently are the doses given?

Dr. Murray: Every other day for the first four or five doses, until the reactions appear.

Dr. Harris: How many doses do you give?

Dr. Murray: The number varies. I have given as many as seventy and as few as seven.

Dr. J. M. Rector, Columbus, Ohio: Is it necessary to make the injections near the rectum?

Dr. Murray: No. I make them in the skin of the buttocks. In the last few years, whenever I make local applications on the skin, it has been 20 per cent. protargol; and if I advise the patient to do anything in the meantime, it is usually to apply black wash, let it dry and then dust with compound zinc stearate.

Dr. Martin: Do you use other methods than the vaccine?

Dr. Murray: Frequently, but not in every case. Some of these patients are treated without any application at all, and they have improved, just the same as the others. Most of these patients have used ointments of some kind, but I condemn the use of ointments. They are dirty, they macerate the skin, make it worse than before and do very little, if any, good. Many patients are opposed to any sort of operation, and in some cases in which the Ball operation has been done a stricture was grafted on the original disease. Perhaps Dr. Martin will say this was due to an inexpert operator, but Dr. Ball himself abandoned it as ineffective, I am told.

THE SUBNORMAL COLON FUNCTION *

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The colon, considered in its entirety, is essentially an organ of elimination and resorption. Its muscular wall endows it with the property of expansion and retraction, and the variation of its axis and caliber controls the current of its contents toward the anus. Deviation from this physiologic process is recognized as a pathologic condition which may manifest itself in frequent discharges, or by sluggishness. Hyperactivity would indicate an exaggeration of its function by virtue of disease within its chambers or upper tracts, that is, it may be extramural or a neurosis. Sluggishness or atony signifies its inability to mobilize its contents by reason of impaired musculature or innervation, giving rise to the adynamic or subnormal colon. The word "atony," which seems best to express the condition, is derived etymologically from the Greek word "teinein," negative "a," which signifies literally to stretch, a translation that we may liberalize into expansion, contraction and retraction—in short, having the property of elasticity. With the negative prefix, the term is made to mean inertia, or want of power or vigor. Atony is applied to any organ giving evidence of want of vigor as to its function. It is a question whether we should not limit its application to structures not under the control of the will. The muscular structure of the colon is made up entirely of unstriped or involuntary fiber, hence its subnormal function must be due to some inherent factor.

FACTORS IN SUBNORMAL COLONIC ACTIVITY

What constitutes the normal function of the colon? It is debatable what intervals in its evacuation maintain the standards of health, and whether daily periods, alternate days, or longer periods of constipation are compatible with well-being. Metabolic disturbance is apparently not in evidence even in three day constipation or with intestinal inertia of a week's duration. While it has been frequently observed that shorter intervals are conducive to ill feeling and depression, such cases are easily corrected by ordinary measures of diet, exercise and various remedies. But the severe types should receive the best care at our command, to obviate all possible sequelae terminating in destructive metabolism. It is obvious that the vicarious elimination of toxic elements due to physiologic insufficiency of the colon so impresses us with deleterious end-results that we are impelled to regard a daily, or at most a bidaily evacuation, as a necessary corollary to health. Some one has said that a daily visit to the "throne of Cloacus" insures one's life that day. With this in view, let us inquire into a few of the many factors that lead to subnormal colon activity: (1) structural deviations; (2) bacterial invasions; (3) occupational influences.

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* Read before the Section on Gastro-Enterology and Proctology at the Sixty-Ninth Annual Session of the American Medical Association, Chicago, June, 1918.

1. *Structural Deviations.*—The cardinal symptoms of the subnormal colon record the presence of mucomembranes, constipation and pain. Glénard himself well describes the disease named in his honor: "Flabby abdomen, outspread like a wallet, looseness, slackness, want of tone of the abdominal walls, bearing down of the bowels and subsequently of the stomach, the kidneys and the liver; and, as may be verified by palpation, either the dilatation or the shrinking of certain portions of the intesine and pulsation of the abdominal aorta." This is the physical picture we adopt in our present consideration.

It is not my purpose to discuss the pros and cons of the antecedents in visceroptosis in its relation to mucomembranous colitis. The inactive colon may exist without enteroptosis. Also, it is certain that enteroptosis may be seen without colitis, but in all serious cases they coexist. The most careful clinical observation can elucidate these problems. It is well to think of some primitive disturbance in the nervous system, or in some predisposition of the economy, by virtue of which intestinal atony, then colitis and enteroptosis may originate on a common basis. The order of sequence matters little. The pain is shifting and accompanies the spasm, occurring in colonic sections, at the angles, then in the sigmoid, the transverse or the caput coli. Spasm of the colon head has led to error in diagnosis, with subsequent removal of a healthy appendix. In examining the large intestine, we find alternate dilatation and constriction, hardness of certain segments and flabbiness of others, displacement of the transverse portion, and gurgling and sonorous splashing, with dull lapping sounds elsewhere. Palpation is frequently painful. The roentgenogram reveals sharpened lateral angles and retarded fecal excursions.

In addition to structural deviations in the bowel itself, the clinician must conjure with certain extramural agencies which provoke the subnormal colon. Bands and adhesions, or a dislocated kidney or stomach combine to irritate the colon. Adhesions succeeding pelvic peritonitis and appendicitis are not uncommon, as well as new growths deflecting normal colonic function. To these may be added anorectal diseases obstructing the evacuation of the colon content.

2. *Bacterial Invasions.*—The colon is a great storehouse for toxins and fortunately is immune in most persons, but repeated mass attacks make dents in the mucosal column of defense, which requires the highest strategy of the clinician to restore. If the first line of defense, the mucosa of the colon, is disabled, the second and third lines, the liver and the antitoxic glands respectively will come to the rescue to neutralize the toxemias. The source of bacteria entering the colon may be the mouth and the gums, the pylorus, a diseased gallbladder, the appendix or any of the pelvic viscera. Besides, bacteria are created in the intestine itself, *sui generis,* by end-products of digestion, and the anaphylatoxin present in certain toxemias, both convulsive and nonconvulsive in character, depend on certain conditions of stasis in the intestine.

3. *Occupational Influences.*—The subnormal colon is rarely found among rural folk. Their active lives in physical effort, with pure air and food, mental contentment and freedom from much worry, are compatible with active secretion and elimination. On the other hand, the anxiety, fear and sacrifice, and perhaps the unsanitary quarters, poor ventilation and sedentary life of the city resident combine to cause the fluctuations on the trophic centers and to inhibit the secretory functions, which terminate in habits of constipation. It is well known how often this effect is encountered in the country lad when he assumes the rôle of college student. Office employment, service in department stores, the mechanic's work and similar occupations requiring intensive effort are conducive to colon stasis, to be self-corrected or otherwise treated. We need only to observe the transforming power of army camp life to be convinced of the salutary effect on previously erratic organs of elimination. The pale-faced city clerk becomes, with his rural comrade, erect, robust and ruddy. I have on record several such cases cured by camp life.

A DIATHESIS

To direct our thought to the subnormal colon, without consideration of certain terminal effects on the economy, would be treating our subject like Ephraim's "unturned cake," half baked. That colonic atony appears to be antecedent to arthritism or at least concomitant with it seems well established. Some students in enterology, notably Axtell and Reed, profess to coordinate subnormal colon functioning with epilepsy, as cause and effect. The correlation of asthmatics and so-called neuro-arthritides in such conditions is well known. It must be conceded, also, that, while constipation is consonant with these ultimate phenomena, not all constipated persons manifest any of them.

These observations show that mucous colitis, either as cause or effect, is in close connection with the nervous system. Analysis of the following facts will demonstrate this more fully. A certain number suffer more or less from intense reflex disturbances going from the irritated intestine, by means of the bulb, thence by that of the pneumogastric nerve or the sympathetic system, and reverberating on the most diverse organs. The heart is subject to this reflex nervous action, with attacks of tachycardia after meals, then intermittences; and an irregularity of the heart's rhythm; and even attacks of pseudo angina pectoris are not infrequent. The proof that these nervous phenomena are correlated with the function of digestion is that they are usually terminated by a stercoraceous evacuation followed by relief.

The terminal threads of the vagus in the lungs are also apt to be affected in the same way. I have often seen marked attacks of asthma from this source. The patient suffocates for want of air, the windows are thrown open, the thorax is immobilized in the act of expiration, and inspirations are made with great difficulty.

In regard to the arthritides as an end-product of intestinal origin, there are undoubted cases, which is in agreement with the splendid researches of Rosenow.

Brick[1] says:

> It cannot be claimed that any specific organism is constantly associated with the disease. Some observers have

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[1] Brick, J. C.: Tr. Am. Proc. Soc., 1912, p. 157.

found the joint fluids sterile, while others have isolated organisms. We may conclude, therefore, that the majority of cases contain no organisms either in the blood or joint fluids. The infection theory of its cause has many features which cannot be determined, such as glandular or splenic enlargement, which at least suggest the result of a toxemia from a distant point, possibly the gastro-intestinal tract. I am inclined to the view that the varied phenomena of arthritis deformans are due to a cerebrospinal toxemia, in other words a trophoneurosis of infective or toxic origin.

Physicians have relieved many cases of neuro-arthritism, by directing attention to a sluggish colon, restoring it to normal activity. This fact is proof that, in some cases at least, it is one focus of infection and becomes a diathesis or predisposition to disease in remote parts.

CONNECTION OF ACQUIRED EPILEPSY WITH COLITIS

There are a few advocates of the theory that acquired epilepsy or those attacks beginning late in life are a trophoneurosis of toxic origin from the colon. In these cases the patients are so easily impressed by the physician's efforts to help them, that he is often misled by their enthusiasm into thinking a permanent cure is at hand, to be doomed to disappointment. Yet permanent cures are reported by some, and much improvement is reported by others, due to keeping the colon clean. Axtell is a firm believer in the correlation of membranous colitis and epilepsy. The demonstration of certain toxemias of the convulsive and nonconvulsive type seems a forward step in the solution of this problem.

A patient under my care since 1912, a married woman, aged 47, who had had both grand mal and petit mal attacks at varied intervals for fifteen years, had acquired epilepsy. Twenty years previously, she had had an oophorectomy and appendectomy performed, which had been followed by severe intestinal stasis and colitis, and a few years later with the fits. The neurologist, with his usual remedies, had kept the attacks under control very well, but finally referred the case for treatment of the colon. We found obstinate constipation, glairy mucus, severe periodic cramps, and a large postoperative hernia. The hernia was repaired, at which operation were noted adhesions too extensive to break up, involving the ascending colon and the sigmoid. So with a hope of reducing the colitis to a minimum, and of thus possibly influencing favorably the epileptic seizure, we performed a cecostomy. She has used irrigations of various kinds through this opening during this time, and has had only three grand mal seizures in six years; but it is only fair to state that mild cataleptic spells of momentary duration have occurred rather frequently of late. For two years following the operation, she did not have a single spell. On the whole, she has had a comparatively good six years, when contrasted with the weekly and daily attacks previously recorded.

I am not prepared in this case to deduce any definite conclusions, but I believe that, if the extensive intestinal traumas could be corrected, the correction would go a long way toward clearing up this case permanently. I believe, also, that the case is a good illustration of the verity of the theory that the subnormal function of the colon is a diathesis leading to acquired epilepsy and other neurasthenic dyscrasias. I do not think that epilepsy in young people has this correlation of cause and effect. Yet it is well known how even they improve on intestinal ablutions.

CAUSES AND TREATMENT

When confronted by patients suffering from subnormal colon activity, we write in our case records such notes as: hemorrhoids, migraine, gravel, arthritism, very great nervousness, hereditary nervousness, hepatic lithiasis, gout, rheumatism, impressionability, obesity in the family, and tendency to worry.

To apprehend the essential and underlying cause of this array of symptoms will properly direct the treatment, both medical and surgical. The treatment cannot be considered in extenso, but merely suggested.

Diet is the first desideratum. All articles of food should be avoided whose digestion terminates in much residuum, and further irritates an already jaded colon. We may give milk, meat soups fat-free, porridge, barley, oatmeal, rice, arrowroot, etc.; eggs, boiled, scrambled or in custards; boiled fish, lean roast, and boiled mutton or beef, etc.; vegetables mashed fine, as potatoes, beans, peas and lettuce; but on no account green vegetables.

The time limit will not allow further discussion of diet and medical treatment of constipation. Suffice it to say that a daily evacuation should be secured by mild laxatives, for of the two evils choose the lesser.

How many persons there are who for years go to stool only by means of a daily laxative, and whose health is not worse, but on the contrary better, than that of those persons who, on pretext of not irritating the intestine, allow fermentable, noisome matter to accumulate there constantly! I would suggest liquid petrolatum (mineral oil) as a purgative and periodic morning doses of sodium phosphate in hot water. I would here emphasize the use of iodin to secure the best results in restoring an atonic colon swarming with bacteria. Solutions of half-grain doses of iodin with aromatic fluid extract of cascara sagrada in a palatable vehicle are well borne.

By means of the roentgen ray, structural deviations may be deciphered that will bring the case into a domain of surgical therapy. How many cases of subnormal colon are restored to normal activity by anorectal surgery, appendectomy, cholecystotomy, or intrapelvic adjustment! Ochsner has reported three cases of rheumatoid arthritis cured through an appendectomy which restored colonic function. The abdominal supporter has done good service in many cases of enteroptosis. Partial colectomy, or short circuiting, does not give me as good results as have been reported by other surgeons.

The pendulum is swinging toward more conservative measures in restoring the subnormal colon. Hammock fixations of displaced viscera should be rarely resorted to. Rather should we endeavor to restore the function by such remedies as strychnin and belladonna to their physiologic limit, together with such remedies as may be secured only by rural environment. Such measures as direct or indirect irrigation, with styptics like krameria, tannin, etc., or, if there is much inflammation, the use of oils, salines, etc., are beneficial. Direct irrigation with cecostomy is effective in severe cases. Finally, a complete survey of the treatment is not designed here, but rather a suggestive outline, with an admonition against drugging as a means of building up broken-down constitutions. Neurasthenics do better on such measures as rest, exercise, good air, proper diet and agreeable environment.

SUMMARY

1. The subnormal colon is a term we have used interchangeably with membranous colitis.

2. The cardinal symptoms are pain, constipation and mucus.

3. Factors to be considered that predispose to atony are enteroptosis, bacterial invasions, occupational environment and neurotic constitutions.

4. It is probably a diathesis toward arthritism, tachycardia, asthma, etc.

5. Further observation should be made in order to link it with acquired epilepsy.

6. Treatment should be comprehensive, each case being a separate problem, to be solved by dietetic, medical or surgical measures, or by all combined.

ABSTRACT OF DISCUSSION

Dr. Dwight Henderson Murray, Syracuse, N. Y.: I think the causes of these troubles that go on to autointoxication, convulsions and chronic nervous troubles are the result of neglect on the part of the profession in not instructing the mother how to care for the child, so that it will not be necessary to give laxatives. Another necessity that we neglect very much is the drinking of sufficient water. The system needs a certain amount of water for elimination, for building up the system and for metabolism. It is also important that one be regular with the the time for bowel movements. I tell my patients that absolute regularity is necessary, and that the proper time is the first thing in the morning. I direct them to sit on the toilet and make the effort, whether they have any desire or not; if this is not successful, I direct them to take an enema of plain water, while lying on the left side. I instruct them not to wait, because normal peristalsis will not take place unless the bowel is about full, and unloading the bowel at night defeats our natural morning action.

Dr. E. L. Eggleston, Battle Creek, Mich.: I believe that a greater number of our patients suffer from some form of colonic disturbance than from any other condition. So far we have not been able to determine definitely the toxic products resulting from bacterial activity in the intestine, although we believe from clinical evidence that specific products are elaborated. I can hardly agree with Dr. Beach that an atonic condition of the colon is frequently found. My observations lead me to believe that in subnormal colon we find a spastic condition in a large proportion of the cases. When there is severe constipation, the roentgen examination reveals a spastic condition of the distal colon with a dilated cecum, and especially do we find this condition to obtain in neurasthenia and other conditions where there is a disturbance of the vagosympathetic nervous mechanism. If you make inquiry of these patients as to how long it has been since they have had a formed bowel movement, they will tell you it has been weeks, or months, or sometimes years. This condition is practically always the result of a spastic condition of the colon, and an improvement in their condition is indicated by the passage of a normal formed stool. This has resulted, not from irritating the colon by cathartics, but from relieving the local congestion and by measures that tend to restore a normal nervous state. I believe that there are two conditions which are responsible for this spastic condition, one a local condition incident to the neglect on the part of the patient in properly caring for himself by allowing the intestinal contents to accumulate for an abnormal length of time, and the other a reflex nervous condition. Dilatation of the colon, particularly the cecum, is entirely the result of the spasm of the distal colon and the dilatation can be relieved only by measures that relieve the spastic condition of the pelvic and ileac portion of the colon. Rest, bland foods, heat externally, warm oil enema, and agar-agar and liquid petrolatum by mouth are measures that are well adapted for the relief of such conditions.

Dr. W. H. Stauffer, St. Louis: The factors involved in producing subnormal colon function are generally threefold: dietetic disturbances, adhesions resulting from surgical operations, generally of the uterus or adnexa, and the local conditions of the lower bowel produced by the use of cathartics and the improper use of enemas. One school of pediatricians teaches that children ought not to drink any water until they are a year old; that milk is the natural nourishment for the child, and it should have nothing else. Another class of pediatricians and nurses insists on giving children enemas in order to produce regularity of bowel movement. This practice should be condemned. I do not agree in regard to the use of preparations of petroleum. They do not empty the bowel. After continuous use of these preparations you will find a condition very much like that found in the automobile engine when it needs cleaning, and until that condition is corrected you will have no normal bowel function. The improper use of enemas causes undue distention, producing atony of the bowel. The occasional use of petroleum is all right, but the habit must not be formed.

Dr. Nathan Rosewater, Cleveland: I was probably the first to prescribe liquid petrolatum internally, fully twenty years ago, and I have prescribed many barrels of it since. It is neither saponifiable nor absorbed through the bowel wall, nor oxidizable; does not maintain germ life, but it acts as a protective and lubricant to the inflamed or traumatized mucosa, while it softens the feces, thus reducing flatulence. I have prescribed it for infants 2 weeks old, while for the aged it is valuable for relaxed as well as for the spastic bowel. It is not a cathartic. It does not stimulate peristalsis, but by its lubricant action permits the normal force of bowel peristalis to exert itself with little or no spasm or colic. It is as useful as a protective in diarrheal as in constipated states. I agree with Dr. Murray as to water, but give it methodically, as to proper time and quantity, to secure the proper amount to flush the circulation, as well as the bowel. It acts more as a bowel flush if two, three or four glasses, hot, warm or cold, are given fully an hour or two before breakfast, when the stomach is surely empty. The bowels then move usually before or soon after breakfast, when the increased peristaltic waves during and following the meal assist in driving the stool forward. In the severe cases the patient is given two meals a day. Two glasses of water hourly or half hourly are given until eight or ten glasses are taken. This flushes the bowel thoroughly, softens and removes hard scybala, whereby mucous colitis and other conditions resulting from fecal stasis and pressure are controlled. For infants and children a sufficient amount of water fully two or three hours after each feeding flushes the bowel and produces softer and less irritating feces and prepares the stomach for the next meal.

Dr. William M. Beach, Pittsburgh: I am heartily in accord with Dr. Murray on the use of water, but I have been in the habit of adding a little salt to the water. The advantage in giving salt water is that one drink makes the patient want another, and in that way he gets the amount of fluid which he ought to have. I want to recommend iodin, administered internally, to restore functional activity of the glands of the colon. I suggested iodin, in half-grain doses, in my paper.

Relation of Cancer to Economic Condition.—In an investigation of the relation of incidence of and mortality from cancer in the period 1914 to 1916, conducted by the statistical department of the Metropolitan Life Insurance Company, interesting conclusions were arrived at concerning the relation of cancer to the economic condition of the victim. The insurance company's policy holders are divided into what are called ordinary, intermediate and industrial classes, the economic condition of the ordinary class being best, intermediate next, and the industrial third. The study led to the following conclusions: the current opinion that there is a positive relation between poverty and a low cancer rate is in all probability unfounded; the cancer rate increases as we go down in the economic scale; this is true of both sexes and by age period where sufficient data are available to form conclusions. It is said that medical selection has been considered in arriving at the foregoing conclusions. Medical selection against cancer is most effective in the ordinary department, and is limited to the earlier ages and to the earlier years of issue. In both ordinary and intermediate departments the effect of medical selection against cancer is limited to the first and perhaps the second year of issue.

MUNICIPAL HEALTH ADMINISTRATION

GENERAL CONSIDERATIONS *

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The total estimated population of continental United States in 1916 was 102,017,312. Of this population, 41,752,530 was urban, that is, was in communities having more than 8,000 inhabitants. There were 770 such municipalities.[1]

In other words, 40.9 per cent. of all our people have their health looked after (or not looked after, as the case may be) by 770 local health departments. In this single consideration, we see the great importance of municipal health administration and also, it would seem, its relative simplicity compared with the problem of looking after the health of the 59.1 per cent. of the rural population. The latter population, which is scattered over the rest of the country and reached only by a bewilderingly large number of local organizations, can at best be coordinated only by efficient state departments of health.

To discuss municipal health administration as a whole would be obviously unprofitable. Dealing with the cities by groups according to population, as has been done by the chairman, helps the situation. Unfortunately, the number of special papers in this symposium had to be limited to three. This necessitated the leaving out altogether of cities with more than 500,000 inhabitants and (more to be regretted) the making of groups with such wide limits of population as to render these groups far from homogeneous even in this single respect.

DISTRIBUTION OF URBAN POPULATION

Let us see how the urban population of the United States is distributed.

TABLE 1.—MUNICIPALITIES IN CONTINENTAL UNITED STATES, JULY 1, 1916

Group	Number in Group	Estimated Population
1,000,000 inhabitants and over	3	9,810,081
500,000 to 1,000,000 inhabitants	7	4,438,369
100,000 to 500,000 inhabitants	56	11,157,102
25,000 to 100,000 inhabitants	201	9,177,026
20,000 to 25,000 inhabitants	70	1,540,749
8,000 to 20,000 inhabitants	433	5,629,203
All over 8,000 inhabitants	770	41,752,530
Population continental U. S.	...	102,017,312

In Table 2 certain of the foregoing figures have been reduced to percentages. In this table only one group is made of places having from 20,000 to 100,000 inhabitants, so as to conform to the groups in the papers which are to follow.

TABLE 2.—PERCENTAGES OF POPULATION IN CITIES ABOVE 8,000, AND PERCENTAGES THAT EACH GROUP OF CITIES CONSTITUTES OF TOTAL NUMBER

Group	Percentage of Entire No.	Percentage of Population Urban	Percentage of Population Total
1,000,000 inhabitants and over	.4	23.5	9.6
500,000 to 1,000,000 inhabitants	.9	10.6	4.4
100,000 to 500,000 inhabitants	7.3	26.7	10.9
20,000 to 100,000 inhabitants	35.2	25.7	10.5
8,000 to 20,000 inhabitants	56.2	13.5	5.5
	100.0	100.0	40.9

Table 2 shows that two years ago (the latest year for which official estimates are available) 9.6 per cent. of the total population of continental United States (23.5 per cent. of the total urban population) was to be found in our three greatest cities, of more than 1,000,000, while 4.4 per cent. of the total population (10.6 per cent. of the urban population) was in the seven cities of between 500,000 and 1,000,000.

Thus our ten greatest cities, those with populations or more than half a million, contained 14.0 per cent. of our total population and 34.1 per cent. of our urban population.

These ten greatest cities, however, represent only 1.3 per cent. of the total number of municipalities in the United States. For this reason, and also because, in the carrying out of their complicated administrative functions, the health officials of these ten greatest cities would gain but little from any formal paper here presented, the section chairman and I were of the opinion that the small number of papers that could be read had better deal with health administration in cities of smaller size.

1. CITIES WITH POPULATION FROM 8,000 TO 20,000

The last of the groups given in the tables—that containing cities of from 8,000 to 20,000 inhabitants—is the most important of all from several points of view. It is important numerically, for it embraces 433 communities, or 56.2 per cent. of the 770.

Chiefly, however, does the importance of this group appeal to us because only very exceptionally will a community of less than 20,000 have a competent health officer. Yet 5,629,206 citizens of the United States live in communities of this size. Civic pride will ordinarily lead these places to have nominal boards of health of their own. Certainly they should have proper health protection in one form or another, since they have their own peculiar health problems quite distinct from those of the surrounding country. Hence it is that communities of this size present one of the most difficult problems in the entire field of public health administration.

In the United States, modern public health work had its first development in certain of our large cities. Next came efficient state health departments. More recently a number of cities of less imposing rank have begun to do excellent public health work. Still more recently we have found much time and attention devoted—and very properly so—to the subject of rural sanitation.

In consequence of the developments just referred to, it may safely be asserted that we have today in this country a far more satisfactory mass of information on public health administration for states and for cities of, say, over 25,000 inhabitants, on the one hand, and for rural sections, on the other hand, than we have for the intermediate communities, namely, those of less than 25,000 and particularly those of less than 10,000 or 15,000.

In various ways the attempt has been made to deal with the problem of health administration in these small communities. Inclusion as part of a really efficient county health department, special arrangements with the state department of health, the combination of several favorably located small communities under a single administration of their health affairs which is better than any one of them could individually afford—these are among the measures that have worked well in special cases.

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* Read before the Section on Preventive Medicine and Public Health at the Sixty-Ninth Annual Session of the American Medical Association, Chicago, June, 1918.

[1] For all statistical data in this paper, I am indebted to Mr. C. S. Sloane, Geographer, United States Bureau of the Census.

The very difficulties of the small cities made it also difficult to find just the man to discuss their problems from the standpoint of actual experience. So we are fortunate in getting Dr. Armstrong to handle this subject. The Framingham situation is, of course, most exceptional. But Dr. Armstrong himself realizes this fully and may be relied on not to present the Framingham work as a thing which may be followed—certainly not as yet—in the ordinary small city.

2. CITIES WITH POPULATION FROM 20,000 TO 100,000

The group of cities containing from 20,000 to 100,000 inhabitants embraces 271 communities, or 35.2 per cent. of all the cities in the United States. Their aggregate population is 10,717,775, which means that 10.5 per cent. of the people of the United States and 25.7 per cent. of the urban population live in cities of this group.

In discussing health administration for this group of cities, Dr. Furstman has a difficult task, since, more than any other group as arranged for the purposes of this symposium, it embraces cities of widely different requirements at the two ends of the scale. It is, for example, open to question whether a city whose population slightly exceeds 20,000 should, as the practice of public health now stands, have a whole-time health officer. On the other hand, there can be no question that every city, long before its population reaches the 100,000 mark, should have a health officer who not only devotes his whole time to his public duties, but who is trained in sanitary science and who possesses considerable executive ability.

In many other particulars there is a wide difference between the requirements and the methods to be followed in the rather mixed class of cities which have been included in this single group. This difficulty will give Dr. Furstman full opportunity to exercise that ability which he has shown as health commissioner of La Crosse.

3. CITIES WITH POPULATION FROM 100,000 TO 500,000

The group of cities that have populations between 100,000 and 500,000 is numerically the smallest that will be considered in the papers of this symposium. It includes fifty-six municipalities, or only 7.3 per cent. of the 770. The aggregate population, on the other hand, is the greatest of all, being 11,157,102, which is 10.9 per cent. of the total population of continental United States and 26.7 per cent. of its urban population.

In spite of the fact that the margin of 400,000 between the upper and lower limit of population in this group is by far the largest that is found in any of the three groups covered by our papers, nevertheless this group is the most homogeneous of the three, by reason of the fundamental fact that every city in the group should have at the head of its department of health an officer equally expert in sanitary science and in the handling of men. After this basic requirement is satisfied, all else becomes merely a question of giving to the right man abundant financial and moral support and a free hand in the development of a department of health which, however much he may be helped by study of what has been done elsewhere, he must work out to suit the peculiar circumstances and needs of his own community.

Cities in this group should each have a real department of health, not merely a board of health with a chief executive officer who is required to be a sanitary jack of all trades, a condition almost necessary in smaller communities. With increasing insistence, as we go from the lower to the upper limit of population in this group of cities, the health officer should be relieved of detail work by surrounding himself with able men in each of the department's activities.

Health administration in this group of cities will be dealt with by Dr. Landis, whose work and accomplishments as health officer of Cincinnati entitle him to speak with real authority.

In the arrangement of this symposium on municipal health administration, we have sought to make it of a practical nature, in the hope that the papers that follow may be of real help to those who are now in control of city health departments or who may later be called to this important field of work.

HEALTH ADMINISTRATION IN CITIES OF LESS THAN TWENTY THOUSAND POPULATION*

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The writer is not and never has been a health officer in charge of routine health administrative work in a small city. On the other hand, as executive officer for the Framingham Community Health and Tuberculosis Demonstration, it has been possible to consider the small city health problems, with the more or less unique advantages of the laboratory worker having for his field an urban community as a social laboratory. It is true that, with adequate funds for health work along various lines available in the demonstration budget, it may be considered that conditions are far from typical. Further, Framingham as a field for experience is under New England town government and in that way differs from similar communities in other parts of the United States in its form of official administration.

Because of the advantages, as well as the limitations inherent in this experience background, no attempt will be made herein to give an historical résumé of small city health conditions. An effort will be made to analyze with some thoroughness the health needs of communities of this kind and the author will endeavor, primarily on the basis of the Framingham experience, to suggest methods for meeting these needs.

While the object of this paper is to discuss in general the health needs of cities of this size, and not to describe in particular the Framingham activities, it may be wise to state that the experience in Framingham is being acquired in a reasonably average American community. Framingham now has a population of 18,000 people, of which more than 6,500 are directly engaged in industry. More than 27 per cent. are foreign born, and in the last five years the town has experienced a growth in population of 22 per cent. The industries are varied, and the social, racial, and economic conditions are typical of a normal industrial town.

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* Read before the Section on Preventive Medicine and Public Health at the Sixty-Ninth Annual Session of the American Medical Association, Chicago, June, 1918.

HEALTH STATISTICS OF SMALL CITIES

As a justification for giving consideration to the health needs of the smaller cities, it may be pointed out that, of the entire population of the United States, July 1, 1916, 7,629,128 individuals were resident in communities having a population of more than 8,000 and less than 25,000. A further analysis of the 1915 census shows that for the registration area, there were at that time 262 cities with a population of more than 10,000 and less than 25,000. The population, the total number of deaths, and the general death rate for special groups of these cities are indicated in Table 1.

TABLE 1.—POPULATION AND GENERAL DEATH RATE FOR TWO HUNDRED AND SIXTY-TWO CITIES IN REGISTRATION AREA BETWEEN TEN THOUSAND AND TWENTY-FIVE THOUSAND

City Groups	Population	Total Deaths	General Death Rate
All cities	4,251,823	60,104	14.1
New England cities	851,136	11,589	13.6
Massachusetts cities	449,958	5,582	12.4
N. E. without Mass. cities	401,178	6,007	15.0
All cities outside New England	3,400,687	48,515	14.3

From this table it will be noted that cities of this class have a reasonably good general death rate (14.1). Massachusetts cities have considerably better than the average rate (12.4), while New England without Massachusetts has slightly more than the average (15.0). It may be interesting to point out that in 1915, Framingham, with 13,815 people and 242 deaths (residents and nonresidents, without stillbirths) had a general death rate of 17.5. This rate corrected for nonresidents was for that year 13.5. For the decade from 1906 to 1916, the general death rate including nonresidents was 15.3 for Framingham. In 1917 this rate was 15.1 (11.1 when nonresidents are excluded).

Another reasonably reliable criterion of health conditions in any community is the situation in regard to tuberculosis mortality. Consequently, an effort has been made on a similar scale to ascertain the mortality of tuberculosis for cities of the smaller size. The 1915 census has been used as a basis here also, and the rates cover all forms of tuberculosis.

TABLE 2.—DEATH RATES FROM TUBERCULOSIS IN ONE HUNDRED AND SEVEN TOWNS

Rates per Hundred Thousand	Cities Falling in Corresponding Rate Class
31 to 60	10
61 to 90	23
91 to 120	22
121 to 150	15
151 to 180	12
181 to 210	12
211 to 310	11
311 to 410	2

For the registration area as a whole in 1915, with a population of 67,336,992 (67 per cent. of the total population of the United States), there were 98,194 deaths certified as tuberculosis, giving a death rate of 145.8 per hundred thousand. In comparing conditions in smaller cities with the registration area as a whole, I have selected five towns in each registration state with a population of more than 10,000 and less than 25,000, except when the states had fewer than five cities of this size. Institution towns, with corresponding above average rates have not been included. This selection gave 107 towns in all, twenty-five of which were in New England. The distribution of all these towns according to tuberculosis rates is set forth in Table 2.

It will be noted that the majority of these cities show tuberculosis rates of less than the average for the registration area. For the most part, cities with higher rates are from southern territories with large colored populations.

Tuberculosis rates in the twenty-five New England cities are distributed according to the figures set forth in Table 3.

TABLE 3.—TUBERCULOSIS RATES IN TWENTY-FIVE NEW ENGLAND CITIES

Rates per Hundred Thousand	Cities Falling in Corresponding Rate Class
51 to 80	6
81 to 110	7
111 to 140	1
141 to 170	6
171 to 200	3
201 to 250	2

It will be noted that approximately half these cities fall below the registration area rate. For any single town, the rates show wide fluctuations yearly, because of the small population involved. In 1915, for instance, Framingham had an exceptionally low rate, 65.1. For the decade 1906 to 1916, the average rate was 99. On the other hand, a study of the reliability of death certification in Framingham indicated that the more probable tuberculosis mortality would be represented by a rate 22 per cent. more than the stated rate. For Framingham, this would give for the decade a rate of 121.5 per hundred thousand, and for the year 1915 a rate of 90.7 per hundred thousand. On the other hand, it is safe to assume that approximately this same error would be found in other communities.

ROUTINE HEALTH PROBLEMS OF CITIES

To return to the direct consideration of the small city health problems, it is obvious that in many respects the factors involved are similar to those met with in the larger municipalities. The routine health problems which cities of all sizes have in common may be briefly indicated as follows:

1. General sanitation. Those responsible for health administration have to deal with matters of general sanitation, such as water supply, milk and food control, sewage disposal, mosquito and fly suppression, regulation of stables, privies, wells, etc.

2. Communicable disease. The health officer is concerned with the control of contagious disease, the suppression of typhoid fever, tuberculosis, etc., and the provision of laboratory facilities for the carrying out of diagnostic and therapeutic measures.

3. Infant life. The provisions for adequate supervisory and educational activities along prenatal, obstetric, and postnatal lines, reaching into the preschool period are essential in the care of infants, and include nursing, clinics and social efforts.

4. School life. The needs of small and large towns alike involve the provision of medical, clinic, and nursing service among schoolchildren.

5. Industrial life. The industrial workers everywhere, regardless of community size, should have provided for them, from public or private resources, adequate medical, nursing, dispensary, first aid, and social service facilities.

6. The middle age. The problems of adult hygiene and of the control of degenerative diseases are the same everywhere, and may be met in small cities as well as in larger communities by the institution of hygienic, educational, and life extension procedures.

DIFFERENCES BETWEEN LARGE AND SMALL COMMUNITIES

Of greater interest than the similarity in problems are the differences that characterize the smaller communities in regard to their hygienic problems. In addition to specific and obvious differences, significant, yet intangible, factors of personality enter into the small town problem, making health administration there sometimes more direct and yet again more difficult.

1. In the first place, the relation of the health administrator to the practicing physician is of necessity more intimate and direct. His contacts are more frequent and more personal. A larger percentage of the population receiving medical care is in the hands of private physicians. Dispensary with outpatient service is less developed, the practice of medicine is less depersonalized. The official town agent, whether tuberculosis nurse or infant welfare nurse, etc., will find herself more frequently dealing with the family physician, and for that reason adaptability, tact, and tolerance are, if anything, more necessary in the smaller community than in the larger.

2. The development of group, "wholesale," or dispensary therapeutic services is less apt to be found in the smaller community and more difficult to establish, for medical as well as for economic reasons.

3. The atmosphere of intimacy which characterizes the relationship between the health administrator and the average citizen must seriously modify the type of educational work that can be carried on in the small community. The health officer, even in addressing the foreign-born and foreign-speaking people in his community, is appealing, not to an impersonal mass of humanity, but to his neighbors whom he meets daily on the street, in the stores, at church, at town meetings, etc.

4. Contrary to what one at first thought might suppose, an inferior degree of cohesion is characteristic of the smaller towns, particularly the New England towns, which more nearly coincide with townships in other sections of the country, and which are spread out over wider territories, frequently being composed of numerous villages, each with a greater or lesser degree of autonomy. Separate neighborhoods, sometimes of special races, are frequently isolated; hygienic conditions in regard to fundamental necessities, such as water supply and sewage disposal, frequently vary tremendously within the limits of the municipality; factories are of diverse types; the milk supply is most heterogeneous, etc.

5. In communities with a relatively small population, age, sex, and race factors may vary radically from average conditions found in larger and more representative units.

6. Many towns, particularly in New England, comprise in their limits a fringe of rural life, presenting special problems of farm hygiene.

7. Hospital facilities, of course, vary for each community, though presumably for most small towns they are less adequate, not only in regard to beds, but also in regard to special and oftentimes even routine medical service, than they are in the larger cities. On the other hand, a smaller community which is the trading and population center for a large semi-urban or rural district, may not only have excellent hospital facilities, but because it is the hospital center for a large population outside the community's own limits, it may have its morbidity and mortality rates seriously affected, unless corrections are made for nonresident illnesses and deaths.

8. All American communities are intolerant of so-called expert services. This is one of the fundamental defects which American democracy must remedy. The man specially trained for any piece of work is still ill-received by the average American community, and has not successfully been made a part of the community life. The recent vicious political attack on the health administration in New York City has met with indifference, if not support, by the rank and file of New York City citizens, largely because the municipality is reacting against the specialist service preeminently characteristic of the previous administration. This is true, of course, along other lines than health. Further, the same difficulty is, if anything, augmented in the smaller American community, for there more than in the larger cities, the citizens, expressing themselves through town meeting, or other local municipal organization, indulge themselves in a belief in the myth of early Grecian democracy, that each individual, be he only a "free man," is capable of governing in any capacity whatsoever, without regard to special training or modern technical requirements.

HEALTH MACHINERY

In discussing the machinery which ought to be provided in order to meet effectively the health needs of the smaller community, no attention will be paid to the cooperative plans that have been developed where small towns adjacent to one another have administered their health work in common. It is assumed that consideration needs to be given to an isolated or at least an independent autonomous community needing and capable of supporting an adequate health machinery of its own. It is the intention of the writer to give primary consideration to routine health machinery, first from the point of view of public provision, and second, through the machinery which private agencies in the normal community might, for the time at least, be expected to provide. Further, there will be discussed certain special health measures which are being experimented with in Framingham, and which, if demonstrated to be a success, may eventually be incorporated, in this community at least, into the routine machinery, and which may subsequently, as a result of this demonstration, be considered routine necessities.

ROUTINE HEALTH MACHINERY

A. Public Provision: 1. Board of health work. It is safe to assume that the health work of a community of 20,000 cannot be administered effectively on a part-time basis. The needs of such a community, as outlined earlier, indicate that full-time service must be required. Further, the Framingham experience has demonstrated that even a conservative New England community may be encouraged to appropriate sufficient funds to make full-time, reasonably adequate service possible. In order to meet the medical, sanitary, laboratory, nursing, and office necessities of a community of this size, the following staff is required: a medical officer of health, a sanitarian (laboratory worker), a tuberculosis nurse, an infant welfare nurse, and a secretary (stenographer). Further equipment includes two or more infant welfare clinics and a small laboratory.

2. School health work. In some communities the school health work may be administered by the board of health, and in others by the school committee. It is probable that an economy in administration will result in having the school health work handled by the board of health staff. In either case, however, the following staff is necessary for a community of this size: one full-time physician, two school nurses, a part-time dentist, and a physical director. Additional equipment will include a dental clinic, an eye refraction clinic, a nose and throat clinic, several open-air classes, provision for school lunches, etc.

B. Private Provision: 1. Hospital facilities. In addition to whatever routine private hospital facilities the community may possess, arrangements should be made for the local isolation of communicable disease, an outpatient service on a pay, self-supporting basis, a sun room and perhaps other facilities for the nonpulmonary cases of tuberculosis, district nursing work, etc. There are practical advantages in having the local district nursing work administered from the hospital, particularly if the hospital operates a nurses' training school; for the nurses in training, under adequate supervision, may be used in the district work.

2. Industrial medical service. Full-time medical, nursing, clinic, and first-aid facilities should be provided at the expense of the industries, for convenient units of the industrial population. This work in the industries may for the most part be largely diagnostic, the therapeutic service being provided by private physicians, and by the outpatient pay clinic mentioned above. Single industries are not large enough to afford full-time service, medical and nursing provision may be made on a joint basis, several industries, preferably similar in type, combining to purchase this service.

3. Private civic provision. Through the creation of a community-wide civic association, essential health activities may be established on a basis of private resources. This provision should meet the needs of recreation, relief, public health education, social organization for health, athletics, and life extension work. The staff necessary for this work will include a social worker, an athletic director, a stenographer, and possibly a special investigator.

SPECIAL HEALTH MACHINERY

In addition to these routine activities, certain experimental activities have been created or are being created in the Framingham "health laboratory." Most of the services to be discussed under this head are distinctly experimental in character, as their usefulness and self-supporting qualities must be established before their recommendation for adoption to the community will be considered as justified. If it can be demonstrated that they meet recognized community needs, some of them would eventually become a part of the town's official health work; others would be taken up by private agencies. These services might be briefly discussed as follows:

1. Industrial Medical Service for the Smaller Industries: It is hoped that a few of the smaller industries in Framingham, not yet provided with full-time medical and nursing service, may be persuaded to cooperate with each other in the purchase of this service. If sufficient appropriations are made to cover the salary of full-time physicians and nurses, there is no reason why this work might not eventually be absorbed by the community and supervised by the local health authorities. Presumably, also, the similar services already established in the larger industries will be coordinated with the service to be established in the smaller plants, and will be supervised by the same central authority, at no expense to the town itself.

2. A Central Milk Pasteurization Plant: In order to encourage the pasteurization of milk, and to make this measure possible for the smaller producers in this community, a central plant for the collection, pasteurization, and distribution of milk is proposed. Once established, this also should be operated on a self-supporting basis, and might be supervised by the local health authorities.

3. An Outpatient Medical Service: With the diagnostic work which is now being carried out in the schools, factories, infant clinics, and elsewhere, the need of facilities for treatment is emphasized. On the other hand, it is believed that these facilities should be established on a self-supporting basis, local medical service should be employed, and adequate compensation should be offered to the physicians engaged for this work. Presumably this work should be carried out in cooperation with the local hospitals, though its coordination and supervision might be directly under the local medical officer of health.

4. An Expert Medical Consultation Service: This service, already in operation for more than a year in Framingham under the auspices of the demonstration, has proved its worth, not only in the detection of tuberculosis, but also in the diagnosis of other conditions. Such a service would seem a necessity for any community, regardless of size, but particularly for smaller communities, where expert facilities are more frequently lacking. There is no reason why this service should not eventually be, in part at least, self-supporting, and its ultimate sponsors might be the local hospitals, the local health authorities, or the local medical organization.

5. Medical Examination or Life Extension Work: Already in Framingham, more than 5,000, or nearly one third of the population, have been examined, largely by physicians from out of town. The citizens are in increasing numbers calling on the local physicians for routine health examination work. This practice of annual medical inspection for the adult population outside the schools and factories should be extended and placed, if possible, on a permanent basis. Its ultimate supervision might be located in the official or private agencies mentioned previously.

6. Community Houses: Already there have been established, under the auspices of the school committee and the local industries, two community houses in Framingham. The programs for these civic centers include a large amount of health work along educational and organization lines. These agencies, while not directly self-supporting, are already established under local auspices and should perhaps be extended into other neighborhoods of the community.

7. A Summer Camp for Children: Such a camp, providing fresh air, recreation, food, and educational supervision for many children of the school and preschool age in the community, should become a permanent factor in the hygienic life of the town. While it cannot perhaps be made self-supporting, the per capita cost is small, particularly if operated as a day camp, and the results would justify public or private agencies in devoting sufficient funds to this work.

8. Neighborhood Health Committees: These have already been established in all parts of Framingham, and the expense involved in the maintenance of this intimate, neighborhood, social organization for disease detection and health promotion is extremely slight, other than the necessary supervision, which might eventually be given by a full-time worker employed by the local civic organization.

COST OF COMMUNITY HEALTH ORGANIZATION

The cost of an adequate community organization for health, as outlined in the foregoing discussion is, of course, the determining factor in its practicability. At the present time communities of this size are spending on an average of not more than 20 or 30 cents per capita on health work, from both private and public sources. Framingham, when chosen for the demonstration, was spending about 40 cents per capita. It is now spending from the public funds approximately 82 cents per capita, which compares very favorably with any community in the United States, regardless of size. Framingham is doing this without, in any way, being conscious of undue public financial burden. In addition, private agencies, including industries, are now spending nearly $1 per capita on medical and health service.

In considering the cost of adequate health machinery to the average community, attention will be paid only to the routine procedures previously outlined. These will be considered in groups corresponding to the services previously outlined.

A. *Expenditures for Public Facilities.*—1. The board of health. An adequate budget for a local board of health should total approximately $12,000, distributed as follows: medical officer of health, $2,500; sanitarian, $1,600; tuberculosis and infant welfare nurses, $2,400; secretary, $800; miscellaneous (including communicable disease work, dispensary work, laboratory work, transportation, office maintenance, etc.), $4,700.

2. The school health work. An adequate school budget ought not to exceed $6,000, distributed as follows: full-time physician, $2,500; school nurses, $2,200; part-time dentist, $500; clinic expense, $800.

This would give from public funds a total of $18,000, or approximately $1 per capita. In most communities a considerable saving, as far as public health expenditures are concerned, could be realized by the elimination from the health budget of certain items having no bearing on the morbidity or mortality rates. In Framingham, for instance, the board of health expenditures now include items totaling more than $1,500, made up approximately as follows: garbage collection, $625; plumbing inspector, $600; removal of dead animals, $30; slaughtering, $300. Practically all these activities might preferably be met by appropriations in other departments, thereby decreasing the burden which health work now carries, though obviously not decreasing the total town appropriations.

B. *Expenditure for Private Health Activities.*—1. In order to provide medical, nursing and other health machinery for the industrial workers in a typical manufacturing community of the size under consideration, it is estimated, on a basis of the Framingham experience, that the annual expenditures will amount approximately to $18,000 a year. This will provide at least three full-time physicians, several nurses, and clinic maintenance.

2. Civic activities. An annual budget of $4,000 for a civic association might be distributed as follows: secretary and investigator, $1,500; physical director, $1,200; stenographer, $800; miscellaneous, $500. On the other hand, many of the activities which might be undertaken, such as gymnasium class work, will prove in part self-supporting.

The entire expenditure necessary to meet the private health needs, including the needs of industry, ought not to amount to more than $20,000 to $22,000, or a little more than $1 per capita. On this basis, the entire community health expenditures from public and private sources would amount approximately to $2 per capita.

PRACTICAL RESULTS IN FRAMINGHAM

It is hoped that the unusual opportunities and resources now available from outside sources in Framingham will throw light on the value, not only of routine procedures, but of the special measures there being tried out. On a basis of the work there, many activities falling both in the routine and special categories may eventually be discarded or permanently adopted. Of course, in Framingham, the main object of the work is to discover and eliminate tuberculosis. On the other hand, as has been indicated in the foregoing paper, every opportunity is being seized to stimulate action along allied lines, and to develop a community-wide machinery for detection of disease and creation of health.

The work in Framingham was initiated shortly before Jan. 1, 1917, and was in part well under way during a fraction of that year. A summary of the mortality findings for 1917 in Framingham may be of interest, as indicating the conditions under which the demonstration was working, and the statistical basis with which its subsequent results will have to be compared. The situation in regard to mortality, as indicated for 1917, is not offered as a manifestation of the effect of the demonstration program. All that can be said at the present time is that it indicates a tendency, which, being in the direction of lower rates, must be maintained and if possible accelerated, if the measures now being tested are to prove of worth.

In Framingham, during the decade from 1906 to 1916, the general death rate including nonresidents was 15.3 per thousand. In 1917 it was 15.1. When nonresidents are excluded, the general death rate for this decade was 13.65, and for 1917, it was 11.1. The tuberculosis death rate per hundred thousand, corrected for nonresidents and death certification errors, was 121.5 for the preceding decade, and 99.0 for 1917. While infant mortality rates for the decade are unreliable, because of the inadequate birth registration, the infant death rate per thousand born in 1916 was 81, and for 1917, 73.

Thus far in Framingham, as has been adequately illustrated in the preceding discussion, the community, both publicly and privately, has been most generous in its support and in its endeavor to meet its own health obligations. The committee in charge of the work in Framingham are encouraged to believe that communities elsewhere, having this example, will endeavor to provide measures for health. Framingham is attempting to set these standards. Thus the nation's municipal health experimental laboratory may also become the nation's health town.

PUBLIC HEALTH ADMINISTRATION IN CITIES OF FROM TWENTY THOUSAND TO ONE HUNDRED THOUSAND *

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From the title of this paper you will undoubtedly realize that it is quite difficult to lay out a plan of health work that will be suitable for all. The question thus arises, why should this task be difficult? Should not health work be the same in a city of 20,000 as it is in a city of 100,000 or more, only somewhat modified to meet local conditions?

You have undoubtedly tried to compare the work of various health departments from annual reports issued by them and found it next to impossible to do so. The greatest single need is probably standardization. In other words, there appears to be no standard of measurement. The public health official realizes that such standardization will promote a unification of thought and action, which will make it possible for him to devise ways and means of fairly competing in the field of public health endeavor.

There is no question that every one engaged in public health work is trying to do what he thinks will accomplish the best results. But is he doing it? Have we as health officers, in the administration of our duties, kept pace with the advancement in public health work? Have we seen to it that the laws relative to public health work have been changed to conform with modern ideas, or are most of us still endeavoring to work under the ancient laws that were passed when contagious diseases were looked on as something mysterious?

Are we as health officers getting the best results for the money that is being spent on health work? It is my opinion that most of us are not. And why not? For the simple reason that we are not all working along the same lines. There is no definite standard laid out for health workers to follow.

In a questionnaire sent out to a number of cities ranging in size from 20,000 to 100,000, I found that considerable attention is spent, and money as well, on garbage collection and sanitary inspection, the latter including the inspection of alleys, outhouses, yards and foods, but little or no money is spent on laboratory facilities, medical inspection of schools and infant welfare work. As a matter of fact, most of the work done in the smaller cities consists in quarantining and fumigating for contagious diseases, in looking up nuisances and collecting garbage. The last branch of the work receives the bulk of the appropriation.

If the merchant or manufacturer hopes to succeed against competition, he must by good accounting learn which goods yield the highest profit. So the health officer, if he wishes his department to have its due share of the municipal budget, must learn which line of work yields the most for the sum expended. He should seek greater financial assistance for the most effective work and should eliminate, cut down, or at least not emphasize, those functions which yield little return for the money. It is difficult to change the direction of sanitary endeavor, but certainly it is our duty at frequent intervals to take account of stock and try thereby to discover the most profitable lines. It is also our duty clearly to set forth our conclusions, even though it may not be easy to convert the public, and particularly town and city councils, to new points of view.

ADVANCEMENT IN PUBLIC HEALTH WORK

There has been considerable advancement in public health work within the last fifteen years, and as we learn more about the causes of the various diseases, our methods of control change.

Years ago when a typhoid fever epidemic presented itself in a community, general orders would be issued to whitewash basements, yards would be cleaned, plumbing would be overhauled, etc., but the epidemic continued just the same because little was then known of the four great public routes of infection, namely, water, milk, food and flies, and what is still more important, carriers and missed cases.

When diphtheria broke out in school, the school would be closed for a few days, the building would be fumigated and the children would be permitted to return to school, but the diphtheria continued. Why? Because no laboratory facilities were at hand to detect the carriers.

In the past we have paid altogether too much attention to the environment and too little to the individual in the spread of contagious diseases. Most men engaged in public health work today are of the belief that contagious diseases are spread by the fresh discharges of the individual and that fomites play no part in the spread unless they are infected with fresh discharges. If this theory is correct, then we must educate the public to understand that fact. The sooner this is done, the sooner will men engaged in public health work be able to spend their appropriations for the more important phases of health work and thereby accomplish the most for the money expended.

DUTIES OF A HEALTH DEPARTMENT

In enumerating the administrative work of a health department, I am going to emphasize what seems the most important duties for the department to undertake.

First, the head of the health department should be a physician, who is especially trained in sanitation and hygiene. It should be his duty to teach the public about the preservation of health and the prevention of disease. The medical graduate of the past has not had this training, because of the limited amount of instruction in sanitation and hygiene that the schools then offered.

In the past the study of medicine has based its teachings on the old principle of the cure of disease, and still continues to do so; while the new profession of medicine, the one we hope for, will certainly have to recast some of the methods of the old medicine, so that it will emphasize the prevention of disease.

If the head of the department is fully qualified to undertake the work, he should be given full authority to choose his subordinates and lay out the work, taking up such activities as he knows will bring the best results for the money available. It is absolutely essential that the department be divorced from politics and that the terms of office of the head be made secure. In La Crosse a board consisting of three members is appointed by the mayor, each member

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serving three years. This board has full control of the health department and is out of politics. The head of the department is appointed by this board and is responsible to them only.

The following activities should be undertaken: (1) control of contagious diseases; (2) medical inspection of schools; (3) infant welfare work; (4) laboratory diagnosis; (5) sanitation; (6) vital statistics, and (7) publicity and education.

CONTROL OF COMMUNICABLE DISEASES

The control of communicable diseases is one of the most important factors in public health work. In order to establish control, the health department must have the full cooperation of the local physicians, for without the knowledge of the existence of these diseases the department would be just as useless as the fire department would be without the knowledge of where the fire was. A thorough investigation of epidemics as well as sporadic cases must be instituted, in order that we may get at the source of the trouble and check the epidemic before it goes too far.

The epidemiologist must always keep in mind the four great public routes of infection, namely, water, milk, food and flies, and since epidemics are the exception to the rule, in the handling of sporadic cases, which he will be confronted with most of the time, he must never lose sight of the mild, the missed and the carrier cases.

Antitoxin and vaccine should be furnished free to all by the department and people should be urged to make use of them. A program should be instituted for the prevention of venereal diseases and tuberculosis.

In the treatment of tuberculosis, the use of the county sanatorium has been and is being urged all over the country.

There is no doubt that tuberculosis sanatoriums do considerable good but I question if we are getting enough good out of the money we are spending for them.

I am firmly of the opinion that if the same amount of money were used in the employment of visiting nurses, who would see tuberculous patients at home and educate them how to care for themselves properly, a great deal more would be accomplished, especially since we, in most instances, get only the patients with fairly advanced cases into the institutions. The nurses, while doing their work in the homes, would be in a position to watch all other members in the family and thereby detect the early cases. If we are going to build institutions for the prevention of tuberculosis let us build preventoriums to take care of the overwhelming number of patients who have been exposed by those that are sent to sanatoriums and really constitute only a small percentage of the cases.

The question in my mind is, are we really handling tuberculosis properly with the county institution and are we progressing in the control of this disease as spent and yields big returns.

MEDICAL INSPECTION OF SCHOOLS

Medical inspection of schools is no longer in the experimental stage. We know positively that any amount of money spent along that direction is well spent and yields big returns.

Medical inspection of schools should include not only the control of contagious diseases but also the routine inspection for physical defects, which is far more important, provided the children showing defects are followed up and the defects corrected.

In this great work, the visiting nurse makes her appearance and I wish to say that without her 90 per cent. of the value of school inspection would be lost. It is through the nurse's efforts in the home that we are able to get the results we are getting in school work. Medical inspection of schools should be under the supervision of the health department, rather than under the board of education. School boards have no authority, by precedence or by law, as have health departments, to follow back to its home outside the schools the ramification of the infection, of which the infected child in the school constitutes but one link. School boards also have no authority over nor information about the large number of children who are not of school age, nor concerning any adult, except those directly connected with the schools.

INFANT WELFARE WORK

This departmental activity surely needs no introduction. It has done and is doing more in health department work than any other activity. I am making this positive assertion because it is one of the activities in health work which, as we know by actual figures, is getting results.

Here again the nurse steps in, and without her we should be at sea. It was thought that clean milk and milk stations were the essential factors in reducing the infant death rate, but we really didn't begin to get results until the nurse was installed.

In this great work we must not lose sight of prenatal work nor of supervision of midwives and boardinghouses for infants.

In spite of the fact that every city undertaking infant welfare work has accomplished results in direct proportion to the amount of money it was willing to spend, it is surprising that many cities are spending considerable money for garbage collection, but not a dollar for this important activity.

LABORATORY DIAGNOSIS

A health department without laboratory facilities is about as efficient as a fire department would be without modern fire apparatus or an efficient water supply. A city, no matter how small, should have laboratory facilities, in order that the physician may be aided in making correct diagnosis and in that way be instrumental in lessening the number of contagious diseases. Examinations should be made for tuberculosis, typhoid, diphtheria and venereal diseases, and water and milk should be examined. The physicians should be encouraged at all times to make use of the laboratory. A laboratory in a community encourages more scientific work among physicians and consequently raises the standard in the community.

SANITATION

I am very sorry to say that sanitation as a phase of health work has been the most popular and one that is probably bringing us the least results for the money spent. With the old ideas as to the spread of contagious diseases we can readily see why this has been so popular. But since most of us know better, why don't we change our methods? Most of us know that we are not saving any lives through the removal of garbage and that this activity should be taken out of health work, but we still continue to attend to it because the public demands that we take care of it. A great deal of money is being spent on food inspection, while little or nothing is being done to see whether the people that are handling the food are suffering from tuberculosis, venereal disease or other contagious diseases.

I do not want to infer that there is no good accomplished from proper sanitation, but I do think we have been giving altogether too much credit to this work. We all appreciate that it is esssential to have a good water supply and that we must look after the milk supply, and in connection with the latter I wish to say that a great deal more time should be given the product on the dairy and less time spent in the chemical analysis of it.

Sanitation, as far as human excreta is concerned, is very essential and obtains results, therefore it is necessary that we have proper sewage disposal, and in smaller communities where there are no public sewers, especial attention should be given privies, because they are a direct menace to health. If they must remain, because of lack of sewers, they should be made as clean and flyless as possible.

VITAL STATISTICS

Without vital statistics, health departments would be at a loss to measure the progress made. Vital statistics are just as important to a health department as is the most careful accounting maintained by our most successful business enterprises. It is the bookkeeping of the health department, and unless the statistics are accurately kept, they are of little or no value to us at all.

PUBLICITY AND EDUCATION

It is within the scope of publicity and education that the success of public health work lies. We have been progressing rapidly in public health work, but we have failed to keep the public informed of our progress. It was not until the public health nurse was added to the department that we were able to get the results we are getting in the reduction of infant mortality, and why? Because she went into the home, gained the confidence of the mother and then educated her in the proper handling, care and feeding of her baby. The public must be educated in health work. They must be shown that it is no longer a mystery. The facts must be put before them, and I am satisfied if this is done that health departments will not have the trouble they now have in getting sufficient appropriations for carrying on this important work.

How are we going to educate the public? By means of publicity, motion pictures, talks, little mother's classes and, most important of all, by means of the school teacher and the visiting nurse. The addition to the department of a paid publicity agent, who is well versed in health matters, and who could place the subject before the public so that the ordinary layman could understand it, would be money well spent.

CONCLUSION

I wish to bring out these facts:

1. We are badly in need of proper standardization of public health work and it is my belief that the best way to go about this is through the creation of a national department of health that would set a uniform standard of work for all health workers.

2. We must take an accounting of the work we are doing to see if we are getting enough results for the money we are spending and to see if we are spending it in the right direction.

3. If the health department is to get the best results, it must be divorced from politics.

4. If the public is properly educated in public health work and is kept informed as to the progress we are making, there will be little difficulty in our obtaining adequate appropriations for the work; and there will be less difficulty in health departments' divorcing themselves from duties they know are not bringing results.

5. If the several branches enumerated cannot be taken up individually, I should suggest the following combinations: (1) control of contagious diseases, medical inspection and nursing; (2) food inspection and laboratory diagnosis; (3) vital statistics, and (4) sanitation.

6. Appropriations, instead of being made in lump sums, should be divided and the amount for each activity specified.

ABSTRACT OF DISCUSSION

ON PAPERS OF DRS. LEVY, ARMSTRONG AND FURSTMAN

Dr. John Dill Robertson, Chicago, said that there is not much difference between the health administration of a small community and a large one, because the latter is made up of a group of small communities. The cost per capita depends entirely on what is done. Is antitoxin given free to schoolchildren in case of a diphtheria epidemic? Is every case to be hospitalized? If so, then a contagious disease hospital is a necessity. By doing these things, he said, $5 per capita a year is not too much.

The health department is in reality a disease department. Money has been spent in fighting disease, rather than in preventing it. In Chicago about fifty cases of venereal diseases are reported each day. A venereal disease hospital has been opened to take care of that situation. About 2 to 4 per cent. of Chicago's population is tuberculous. A million a year, or 40 cents per capita, is spent in Chicago for tuberculosis work.

Mr. Eugene R. Kelley, Boston, said that we are apt to regard county sanatoriums and hospitals as if they were addenda, whereas they are supplements. We cannot do without one or the other. Massachusetts, he said, has come nearer to supplying proper supervision through the public health nurse to all classes of population than any other city. A mandatory law requires that each community of 10,000 or more inhabitants should maintain a tuberculosis dispensary. The main part of the dispensary machinery should be the visiting nurse. The affected communities cover 85 per cent. of the whole population. The state is divided into eight health districts. One health nurse and one doctor correlate the work of the dispensary and look after the regular cases. The follow-up work of the State Sanatorium for Consumptives is also being done by these workers. About ninety of the Visiting Nurses' Association follow up tuberculous cases in addition to the bed tuberculous. The biggest obstacle that those nurses have, Mr. Kelley said, is the lack of suitable institutions and beds. After developing a state sanatorium, a number of institutions for county cases of tuberculosis were created. However, the nurse is as essential as the institution. The completely rounded-out program, in Mr. Kelley's opinion, would be to have the nurse working in the home, getting the patients into the institution and supervising them after they come back; the institution taking the cases that cannot be properly handled in the home.

Dr. Herbert L. Wright, Kenosha, Wis., said that Kenosha will complete an isolation hospital soon. A health and dental clinic has been established; also a baby camp on an island in the lake, and a laboratory known as the State Cooperative Laboratory.

Publicity, Dr. Wright said, plays a very large part in the progress of health work. The public should be educated in regard to health activities. The people must see something. The baby camp and the dental clinic are tangible activities. Vital statistics also play a very large part.

Dr. Herman N. Bundesen, Chicago, said that in Chicago all cases of tuberculosis are visited. If the patient does not take reasonable precaution, he is reinstructed. If after several investigations, the patient does not adhere to the rules, the authorities placard the premises for five days. If this does not bring results, the patient is hospitalized. Usually, after from five to six weeks, the patient asks to go home. If conditions at home are safe, he is discharged. If he is an open case, he is visited at least once a week, and if he is slipping on the instructions, he will again be hospitalized.

Dr. Bundesen said that the idea of the visiting nurses is impossible, impracticable. They have no authority. The health department has the authority. The sanatorium or visiting nurse cannot get the cooperation of the patient. The health department can handle the case. With authority, tuberculosis can be controlled like any other communicable disease.

Dr. P. S. Schenck, Norfolk, Va., said that when Virginia passed some new child labor laws, two years ago, the health department was besieged with applications for birth certificates, about one in four or five of which could be supplied. In order to improve birth registration the King's Daughters were interested in this proposition. A force of 600 women was organized. The city was divided into districts, with about twenty workers in each district. Every house in the city was visited and every birth in every family for the past six years was registered. The state health department helped to check the reports. Not only have those ladies become interested in the birth registration, but they instructed the people as to future reports and getting in touch with the health department on other matters. In handling the food proposition, Dr. Schenck said, they organized the housewives. These ladies appointed a committee in every district in the city; visited the stores, and reported everything they saw that did not suit them. To control tuberculosis, an antituberculosis league was organized. A clinic was opened at which a small entrance fee is charged. The league has about 3,000 members. Two nurses and one doctor do this work.

Dr. I. D. Rawlings, Chicago, said that hospitals are essential to the control of communicable diseases. Hospitals also make for much less hardship in the home. The quarantine restrictions in Chicago are very drastic in many respects. No worker can live at home unless absolutely shut off from all communication with his family when a major disease is under quarantine, hence, it is a kindness to that family to place the patient in a hospital where the care is far superior and the death rate smaller. Chicago is not doing much on prenatal work because of lack of funds. The requirements of the state department of health in the various states should be reasonable but effective, and then the communities in that state should be required to live up to these requirements. Scarcely a day passes that the Chicago Health Department does not ask cooperation of the police department in enforcing these requirements. About 180 cases of venereal disease are reported each week through the courts, and in many instances the judge paroles in the regular routine manner. These people are either paroled to a physician, who will assume responsibility for treatment of those patients, and also guarantee that these women will not infect others while under treatment. Some persons who cannot be paroled are placed under treatment in a hospital set aside for that purpose.

Dr. O. B. Nesbit, Gary, Ind., said that in Gary the "Children's Bureau" is making a survey of all children under 7 years of age. They are notified to come to school and a study is made of these children in the kindergarten and first grade. The parents are asked to be present at the examination. He believes that this work is more promising than the work of the visiting nurse. The parent should be encouraged to talk to the doctor. The people want to see and know what the doctor says about things; it is a point in school work that has been neglected.

Dr. Hasbrouck De Lamater, St. Joseph, Mo., said that in his city the salary of the full-time health officer is paid, in part, by the board of education and in part by the board of health, and also by means of donations from public spirited citizens. The duty of the health officer or director of hygiene is a preventive and educational one. Sickness comes under the Board of Public Welfare. They appoint their staff physicians, and all medical, surgical, obstetric cases are taken to the hospital or cared for in their homes by what they term the family physician. He is convinced that volunteer work in school inspection is worthless. The average practitioner will take care of his own patients first before he takes care of the school work. An ordinance in St. Joseph gives the director of hygiene power to go into the home and take out any infectious case, no matter what, even venereal disease, and hospitalize the patient. The system to carry on the public health work of the smaller cities, Dr. De Lamater said, must be adapted to that place. Too many men have been theoretical rather than practical.

Dr. Peter Brice, Montreal, Canada, said that he had compared the deaths and hospital cases in the sanatorium at Ottawa with those of the city of Hamilton, Ontario, both cities having about the same population. In Ottawa the death rate from tuberculosis has been high. Hamilton has been going down in the number of tuberculosis deaths. For several years the two cities have had sanatoriums or hospitals for advanced cases. In every respect the two cities have been similar. Ottawa has a very good organization, but Hamilton has a better organization. In 1916 Ottawa had 211 cases in the sanatorium. Hamilton had 246 cases. Ottawa had fifty-one deaths in the sanatorium; Hamilton had twelve cases. Hamilton had eighty-eight persons under 15 years of age under treatment out of the 246 cases. Ottawa had eighteen. Hamilton had 142 days' treatment for each case, on an average; Ottawa had ninety-five days. If the disease is discovered in its initial stage, and the patient is kept under treatment until practically cured, these cases will not become old cases, going to hospitals and dying, because they go in too late for treatment. The hospital is as essential as the visiting nurse, and the visiting nurse is as essential as the hospital. In Hamilton 90 per cent. of the patients in the sanatorium come through the nurses of the public schools. In Ottawa the nurses are not under the board of health, and they are not finding the early cases in children. The parochial schools have no nurses at all. The class of population whose children attend these schools furnishes the larger number of tuberculosis cases. Toronto has ninety-three public health nurses doing the district work. Last year they had eighty-six deaths in July among children under 1 year of age. Montreal had sixty with a population five times as great.

Dr. C. J. O. Hastings, Toronto, Canada, said that the control of communicable disease which has been looked on as the "be all and end all" of public health administration, is only the fractional part of it, although it is essential. Health work must begin with the expectant mother. The conditions under which she is living and the revenue of the home, etc., must be such as to make it possible for her to bring into the world a fit offspring. Toronto has made provision for prenatal care, and the care of the child of preschool age, a period sadly neglected in public health work. Mothers have been supervised during the expectant period at "well baby clinics," of which Toronto has twenty-three. The children are brought there to be weighed, measured and examined by physicians. The follow-up work is done by the public health nurse. The children of preschool age that are left there while the mothers are working are examined. In that way many defective conditions of the child will be removed before it enters school. Dr. Hastings said that nine tenths of the efficient public health work is educational. In Toronto this work is done by the health authorities and not by the board of education. The importance of a complete physical examination of every child entering the school, having the parent present, cannot be overestimated. It is effective education. In nine cases out of ten, the parent witnesses the examination, and is delighted to know that they have a physical record of his or her child, or attention may have been drawn to some defective condition. Before the children leave school a complete physical examination ought to be made again, to determine the best vocation in life for that child.

Toronto has ninety-three public health nurses, taking up all activities in connection with the department. That includes the activities in connection with the school work. There are no school nurses or tuberculosis nurses or child welfare nurses. The public health nurse is doing the combined work. The school nurse, when her duties are done, so far as school is concerned, is visiting some of the homes in the district, ascertaining the conditions there. By specializing in the home rather than on the disease, the work is done much more economically and much more efficiently.

DR. DONALD B. ARMSTRONG, Framingham, Mass., emphasized the value of using women in canvassing and covering the different sections of a community for various purposes as was done in Norfolk. Framingham made use of neighborhood committees, and in one year increased the number of registered births by nearly 30 per cent. He suggested that very frequently that type of an organization can be made a permanent organization by selecting, on various streets, the leaders, those who have the most enthusiasm, and making them a permanent group for that particular neighborhood. When called on they will attend to the distribution of literature, canvassing for medical examination, reporting of sickness as well as births, and other things. Framingham has also organized the schoolchildren into "health crusaders." This has also been tried out in other communities, and is proving very profitable. About 80 or 90 per cent. of the children are health crusaders. They are members of clubs in their own schools, and are helping in various ways to do different things in the community, such as sanitary inspection. This educates the youngsters and furnishes useful information. Each child keeps his own score card of public health activities and various hygienic practices that he is supposed to observe, such as hand washing before meals, sleeping a certain number of hours, etc. All of this proves to be very useful, and has interested the children so that they are now "thinking health" primarily.

DR. J. M. FURSTMAN, La Crosse, Wis., speaking of tuberculosis said that a combination of both the institution and nursing service would be ideal. But with the smaller communities, with 200 and 250 cases of tuberculosis and an institution accommodating, say, only forty-four cases, not much would be accomplished by hospitalization. With the general practitioner, most of the cases reported are far advanced cases. There is not any question that other members of the family have already become infected. Contagious disease hospitals in the smaller communities, the speaker said, are an expensive proposition. If an arrangement could be made for some of the smaller hospitals to make an addition to the hospitals to take care of communicable diseases, the maintenance cost would be less, and more cases could be admitted. He is satisfied that we can get considerably better results for the small amount of money it is going to cost to take care of these cases in the hospitals. A hospital for communicable diseases with a bed capacity of forty would cost $50,000. A small isolation hospital in connection with one of the hospitals gave facilities in La Crosse for taking care of twelve or fourteen people comfortably. This hospital has been remodeled, and now has facilities for about thirty-five. All the expense the city has had to bear is the taking care of the patient in the hospital. There is no overhead expense; no maintenance whatever. If that system can be adopted in the smaller communities, more cases can be hospitalized.

Ascaris Escapes Through Ear.—The little girl of 4 was taken suddenly with intense earache, but there was no fever, and paracentesis brought no pus. By the third day the child had syncopes, violent nystagmus and general convulsions, and then something was seen in the ear which resembled the wormlike mass from a tube of tooth paste. It was seized with Kocher forceps and proved to be a male ascaris nearly 6 inches long.—*Revue de laryngologie*, 1918, **39**, 358.

THE ORGANIZATION OF HEALTH DEPARTMENTS

IN CITIES OF ONE HUNDRED THOUSAND TO FIVE HUNDRED THOUSAND POPULATION

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No hard and fast rule can be laid down for the organization of health departments for all cities of between 100,000 and 500,000 population.

Very few cities present exactly the same health problems. It follows, therefore, that while a general plan may be suggested, this plan must be flexible enough to meet varying needs due to purely local conditions.

At the present time, it would be difficult to find two cities with the same organization. Some are governed by an independent board; others are a division of some other department, such as the service or safety department; and still others are under a commissioner of health appointed by the mayor. Some have charge of hospitals, insane asylums, charitable and correctional institutions, plumbing and building inspection. In some cities, school medical inspection is a school board function, in others a health department function. Others include street cleaning and the disposal of ashes and garbage.

This lack of system leaves one practically helpless to make comparisons or to arrive at a definite conclusion as to the per capita expenditure of a given city for purely preventive medicine work.

The chaotic state in which we find the subject is probably due largely to differences in state laws and to the revolutionary political period through which American cities have been struggling. Geographic location is also of importance because of the special problems that may confront officials of coast cities or those located on or near international boundary lines. To the foregoing may be added the tremendous strides made in our knowledge of the subject of disease prevention during the past quarter of a century, and the slowness or rapidity with which this knowledge is applied.

In dealing with this subject, it is understood that nothing more than a skeleton form of organization can be outlined, and that the population to be served is to be taken into consideration in determining the number of employees working for the particular city under question.

Control by a board of experts has advantages that are hard to duplicate in any other method of organization. Among these may be mentioned a continuous policy, practically free from political interference due to changes in administration. Public health work is a highly specialized branch of medicine, requiring a vast amount of time to acquire the knowledge necessary to secure efficient results. Change in the executive officer and his force with each change in the general administration of a city results in disintegrating a trained force and substituting one inexperienced and necessarily inefficient. While incumbency is not synonymous with honesty and efficiency, the experience gained in eight years of public health work has given me a very high opinion of the honesty and efficiency of the average individual if freedom of action is assured him in the performance of his duties. Service under an independent board insures freedom of action to a greater degree than can be hoped for when appointment comes from some other source.

Boards of health have legislative powers and are independent of other branches of the city government in passing necessary regulations. The work of the board necessarily gives it information concerning sanitary needs and the proper method of meeting them that is impracticable for others to acquire whose time is taken up largely with other duties. In other words, it specializes in its work, knows just what it wants, and takes the most direct method in securing it.

In their recommendations for an ideal health department for Minneapolis, Biggs and Winslow say:

> The administration of health laws, as in the case of most other municipal activities, should be in the hands of either a single expert or a small body of experts, in order to obtain the best results. In most city departments the single commissioner is preferable to the board. In the case of the health department, however, the framing of ordinances requires the exercise of legislative powers which can not be entrusted to a single officer. If there is a single health commissioner with no board, the ordinance framing power must be left in the council. With the complexity and rapid progress of public health science on the one hand, and the pressure of private interests on the other, such a course is certain to be disastrous. It is for this reason that whatever may be the case in other departments of government, sanitary policies and legislation and administration can be most successfully developed and carried out by a board.

The work of a department of health includes a wide variety of functions, making it necessary to group those closely related into different divisions. These, in turn, may occupy ground that is common to two or more divisions, so that the best results can be obtained only by the fullest cooperation between the various divisions. The work of the divisions of medical inspection, food inspection and the laboratory in a milk-borne epidemic of diphtheria or typhoid fever may be cited as examples of instances in which three or more divisions might be actively engaged in solving one problem.

While very few health departments perform the same functions, most of them have divisions of general administration, medical inspection, food inspection, sanitary inspection, laboratory, and vital statistics, and I shall give these divisions consideration in developing the title of this paper.

GENERAL ADMINISTRATION

To general administration belong the executive officer, the clerk and stenographers. The successful executive officer must have something in addition to a knowledge of the game to insure success; he may have a very wide knowledge of his duties and yet be a failure as an executive. Brusqueness and incivility are no longer accepted by the public as infallible signs of genius, or excused on the ground of temperament or eccentricity. He must be able to secure results and do it without creating opposition. The ability to refuse unreasonable demands and send the applicant away feeling that he has been the recipient of unusual favors is one possessed by few men, but one that is very essential to success in public health work. He must be able to harmonize the little jealousies that do so much to disorganize a force and destroy its efficiency. In a word, he must be not only a master craftsman, but he must have the personality that counts for success in any walk in life. Similar personal qualities are essential for a successful clerk, for the reason that one weak link in the chain destroys the usefulness of the whole.

Publicity might well be placed in the division of general administration. The public knows what it sees, hears or reads. Where one gains knowledge by seeing or hearing, thousands learn by reading. For this reason, the activities of a department should be placed before the newspaper-reading public by some one individual in the department with special aptitude for that kind of work.

FOOD INSPECTION

The division of food inspection should employ experts only. Laymen cannot be expected to have the exact knowledge necessary for efficient work. Milk and dairy, and meat inspectors should be graduates in veterinary medicine. Since adopting this rule, Cincinnati's meat inspection service has been placed on a par with government meat inspection. The chief of the division must be familiar with all varieties of food and their multitudinous forms of adulteration. My ideal of a chief food inspector is one with this knowledge and the heart of a gladiator, for he needs that quality to place "the fear of God" in the hearts of that small minority whose rascally actions lower the tone of the entire food industry.

Food inspection should include surveillance over all foods, and the places and persons engaged in the industry, with authority to enforce regulations necessary to protect the general public from articles detrimental to health. Most forms of adulteration are commercial frauds, and their detection could very properly be assigned to some other department. It is the meat and milk supplies and other perishable foods that require constant watchfulness on the part of the food inspection division. Close cooperation with the division of infectious diseases is necessary in order that food-infected foci may be located and proper steps taken to limit the spread of infectious diseases. One or more central points for the pasteurization of milk, under supervision of the health department, would be the most important step that could be taken to minimize the spread of infection through this important article of food.

MEDICAL INSPECTION

The division of medical inspection should have as its chief an expert in the differential diagnosis of the acute infections. Medical inspection should include medical relief of the poor, surveillance over infectious diseases, the enforcement of quarantine, school medical inspection, open air schools, pure milk stations, dental inspection, epidemiologic study of the acute infections, the isolation of diseased prostitutes, prenatal and postnatal instructions, prevention of infant mortality, control of tuberculosis with special reference to the removal and detention of vicious consumptives, and control of midwives with particular attention to the prevention of blindness.

Management of hospitals, insane asylums, and correctional or charitable institutions has no place in public health work except to control the method of admitting and discharging cases of infectious disease and general sanitation of the institution.

School medical inspection should be under the control of health departments. If carried on by the board of education, twilight zones of authority are created that cripple efficiency and give rise to needless friction. In other words, a division of authority always paves the way for inefficiency or leads to a duplication of effort and expense.

Full-time work is an absolute essential for district physicians if the best results are to be obtained and friction between the family physician and district physician is to be reduced to a minimum. Since the adoption of this policy in the Cincinnati Health Department, the work of the district physicians shows an increased efficiency of about 40 per cent., and misunderstanding with the general profession has practically disappeared. As they have no private practice, there is no ground for the suspicion that their acts may be inspired by selfish motives.

An adequate force of nurses is necessary to follow up the cases. Their influence in the home has been of the greatest importance in securing compliance with the recommendations of the district physicians.

The epidemiologic study of tuberculosis has been neglected. It is reasonable to believe that much could be learned that is now unknown concerning the spread of this disease, and the application of this knowledge would result in decreasing the morbidity and mortality rates from this cause. Every city of the first class should have one or more experts giving all their time to the study of this disease. These experts would logically be a part of the force engaged in carrying on the subdivision of tuberculosis.

The results obtained in cities devoting special attention to prenatal and postnatal instruction, to the control of ophthalmia neonatorum, and to the prevention of infant mortality, more than justify the expenditure necessary to provide the nursing and medical service.

Cincinnati's Association for the Welfare of the Blind, for example, in two years treated fifty-nine cases of "sore eyes" in new-born infants without blindness occurring in any case. This was done at an annual cost of about $1,000 to the Association, and includes the salary and incidental expenses for a nurse. It is not to be assumed that all of these cases would have resulted in blindness had the patients received no treatment, but the chances are that many of them would have become life-long dependents from this cause. If only one was saved from this fate, the cost of prevention returns a dividend to the state for education alone of 450 per cent. Assuming that all were saved from blindness, the return on the investment amounts to 13,075 per cent., or $261,500. The foregoing figures are very conservative, for they take no account of the blind pension and other expenses borne by public and private charity or of the economic loss due to impaired productive units.

Other figures showing the enormous economic saving brought about directly through public health work could be brought forward that would stagger the imagination.

The prevention of infant mortality means coordinating the efforts of numerous functions. Improvement in milk and water supply, the establishment of pure milk stations, the education of parents through lectures delivered to mothers' clubs, and through visiting nurses, have resulted in a reduction since 1910 in deaths from diarrheal diseases in infants under 2 years in Cincinnati from 104 to 40 per hundred thousand of population. The economic saving in eight years, assuming the potential value of an infant to be $1,000, amounts to over a million dollars, which amount is hundreds of thousands of dollars in excess of what it cost to run the entire health department during that period. Intelligent expenditure of a small amount of money on prenatal and postnatal instruction would result in still further reducing infant deaths from preventable causes.

SANITARY INSPECTION

The division of sanitary inspection is confronted with problems of sufficient importance to require a chief who is a graduate in sanitary engineering.

As plumbing, heating, lighting and ventilating are all vital factors in determining the average state of health of a community, it seems rational to include plumbing, building, workshop, factory and tenement house inspection in this division. In Cincinnati, plumbing, building and tenement house inspection are in a subdivision of the department of public safety, while workshop and factory inspection is performed by the state. The arrangement is not a happy one for the reason that it is impossible to define accurately the line of authority separating the three departments. Work is duplicated, and not infrequently one may find three sets of orders on the same property, differing one from the other according to the personal views of the inspectors.

Close cooperation should exist between the division of sanitary inspection and accredited delegates from labor unions. In Cincinnati, the sanitarians of organized labor meet with the sanitary chief twice each month. Information concerning insanitary conditions in workshops and factories is solicited, special care being observed to suppress the source of the complaint. A vast amount of good has been accomplished, and the unions are enthusiastic in their support of the plan. The complaints are referred to the building inspector, the state inspector, or the sanitary division of the health department, according to the nature of the complaint, and the proper authority to conduct an investigation. While the work described is not ordinarily found in a health department organization, it has much to commend it to those desiring to develop latent activities in a municipality. It is a means of education among a class of people who are more vitally interested in securing improved sanitary conditions than any other class in the community.

In the matter of dealing with nuisances, American cities could adopt European methods with advantages in the way both of increased efficiency and economy. The regular police are charged with this duty abroad. The plan has the advantage of a large force of inspectors; regular police officers cover their beats every day, often several times each day. Orders received from a man in uniform carry more weight than those coming from the average inspection force of a sanitary division. The notion that it is beneath the dignity of a regular policeman to report conditions threatening the health of citizens is foolish and needs radical revision. He should be made responsible for sanitary conditions on his beat, as well as for the safety of life and property.

The work of the building department and that of the division of sanitation of the health department necessarily bring the two functions into close relationship. Questions concerning sanitation very naturally belong to that division; those dealing with structural defects which may have no bearing on sanitation belong to the building inspector. Lack of light and air, the presence of dampness, inadequate sewage disposal, etc., are conditions detrimental to public health and may be due to structural defects, thereby placing the solution of the problem in both divisions of the city government. This necessarily means a division of authority and responsibility, and calls for the closest cooperation between the two.

In Cincinnati, a vacation ordinance has done much to simplify the work of both divisions.

LABORATORY

The laboratory division calls for the full-time services of expert chemists and bacteriologists. Chemical and bacteriologic examinations of water, milk and other foods subject to infection or liable to adulterations that may directly endanger the public health are indispensable, as are facilities for the free diagnosis of specimens from cases of diphtheria, typhoid fever, tuberculosis, rabies, etc. The manufacturing of antitoxins and vaccines entails an expense that few cities are justified in assuming, and one that is better left in the control of commercial houses.

The detection of frauds practiced for purely commercial reasons and the assaying of materials used in filling public contracts, which have no bearing on public health, have no place in a department of health laboratory.

VITAL STATISTICS

The vital statistician has been called "humanity's bookkeeper." He needs considerable in the way of tact to meet and overcome the eccentricities with which a very small minority of the medical profession burden themselves. The work includes the securing of reports and classification of births and deaths.

The reporting and classification of communicable diseases is so intimately bound up with the work of the division of medical inspection that it is included in that division of the Cincinnati health department.

CONCLUSION

In closing, it seems desirable to state that a department may have an ideal organization on paper but a very mediocre one in securing results. While a good plan is desirable, good results may be obtained in spite of the fact that the paper plan is full of defects.

In the long run, results are brought about by men who are qualified to carry out policies by a close and harmonious cooperation between chiefs of divisions and other departments of the city government. Without the proper qualifications and close cooperation, any scheme of health administration degenerates into a ghastly joke and a gruesome tragedy.

Killing Head and Body Lice.—In an article on the louse problem in the United States Army, printed in the *Review of War Medicine and Surgery*, October, 1918, the following method of killing head lice is given: Clip the hair of the head with a hair clipper and wash with a mixture of equal parts of vinegar and kerosene. This should be followed in a few hours by a bath of soap and hot water. Following this treatment a search should be made for nits and lice and if found the treatment should be repeated. For crab lice the same mixture is used, after shaving the pubic region, axillae, chest and legs. As mercurial ointment, which is sometimes used, may cause a dermatitis, yellow oxid of mercury 10 parts, salicylic acid 1 part and petrolatum 20 parts may be substituted. For body or clothes lice, heat, either dry, or, better, in the form of steam, is best. Other things suggested are the English N. C. I. powder, consisting of naphthalene 96 per cent., creosote 2 per cent. and iodoform 2 per cent. The powder is dusted over the underclothing and on the inside of the outer clothing once a week. Also crude oil 9, soft soap 5 and water 1 part, or, soft soap 10 and crude naphthalene 90.

CEREBRAL SPASTIC PARALYSIS *

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The syndrome known as Little's disease was first brought to the attention of the profession by Little of London, who, in 1843, in a lecture before the London Orthopedic Institute, reported several cases of the disease, which since has borne his name.[1] For a great number of years, this syndrome was erroneously classified as a medical entity, without any regard for the numerous causative factors. Since its etiology has been more completely recognized, it has been found that instead of its being a single medical entity, there are a great number of conditions with various etiologic factors, all producing the same end-results classified as Little's disease.

Cerebral spastic paralysis, or hemiplégie cérébrale infantile, seems a better term by which to express the manifestations of these various etiologic factors. The latter have been well classified by Grossman[2] into three groups: 1. intra-uterine, or prenatal; (2) natal, or intrapartum, and (3) extra-uterine, or postnatal.

The most important prenatal factors are malformation of the brain, porencephaly, microcephalus, atrophy of one hemisphere, congenital cysts and cerebral disease. In the intrapartum etiology, the chief factors are intermeningeal hemorrhage, intercerebral hemorrhage, cerebral palsy, and degenerations of the pyramidal tract after premature delivery. Injuries to the skull with subdural hemorrhage, circumscribed encephalitis, sinus thrombosis and embolism, and syphilis constitute the chief extra-uterine causes. In order to facilitate a clearer conception of the manner in which all these enumerated factors may produce the same end-results, the physiologic pathology on which spastic paralysis is based must be studied.

Whenever there is a break in the continuity of a motor corticospinal tract, of which the pyramidal tract is the most important, there results a characteristic motor paralysis. Irrespective of whether the lesion be situated in the brain or the cord, the resulting paralysis will be the same. This paralysis consists of a paralytic and a spastic component.

ETIOLOGY

Normally, impulses are propelled along the pyramidal tract to the various muscle groups, enabling these muscles to perform certain voluntary motions; but when there is a break in some part of this tract, these impulses no longer reach the affected muscle, and they are consequently unable to carry out certain of these voluntary motions or all of them. This is termed the paralytic component. On the other hand, an involuntary spasticity of the muscles takes place, which adds itself to the actual paralysis and intensifies it. If this spasticity is examined more closely, it becomes evident that the underlying cause of the condition is the increased reflex excitability of the peripheral muscles. Sensory impulses arising in the skin, ligaments, joints, and especially the muscles, are propelled along the sensory peripheral nerves and the posterior nerve roots, through the gray matter of the cord and the anterior motor cells, along the motor roots and motor peripheral nerves to the muscles, forming the spinal cord reflex arc. It is this reflex which maintains muscle tonus, and keeps the muscles in a certain degree of fixation. For convenience sake, it has been termed the fixation reflex. The pyramidal tract contains fibers which have an inhibitory action on this fixation reflex, keeping it at a point equivalent to the normal muscle tonus. But when the inhibitory action of the pyramidal tract is destroyed, allowing the fixation reflexes to exercise their full power on the muscles, without any restraint whatever, they cause spastic muscle contractures. This is the spastic component of the paralysis. Proof of this theory may readily be found in the living human pathology. One need only examine a tabetic patient, and observe the flaccid condition of the muscles to note the comparison. There is a complete absence of muscle tonus, due to a break in the continuity of the fixation reflex arc, resulting from the degeneration of the posterior tracts of the cord. But more convincing than this is the clinical picture of a patient suffering from a lesion of the pyramidal tract, with marked muscle contractures, who secondarily acquires a tabes. The muscle contractures relax, and instead of a spastic paralysis there results a flaccid paralysis.

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* From the Surgical and Orthopedic Divisions of Mt. Sinai Hospital, Cleveland.

* Read before the Section on Orthopedic Surgery at the Sixty-Ninth Annual Session of the American Medical Association, Chicago, June, 1918.

* Because of lack of space, this article is abridged in THE JOURNAL by the omission of the footnotes. The complete article appears in the author's reprints, a copy of which will be sent by the author on receipt of a stamped, self-addressed envelop.

After careful perusal of these pathophysiologic facts, one may readily see that any one of the previously enumerated etiologic factors, acting on the pyramidal tract, either in the brain or cord, may be the causative factor in the production of spastic paralysis; and the degree of impairment is dependent entirely on the extent of the involvement of the pyramidal tract.

It does not lie in the scope of this paper to discuss in detail the anatomic pathology of the various etiologic conditions which may produce this syndrome, since the end-result will be the same, regardless of whether the causative lesion produces an injury to the pyramidal tract by means of pressure, inflammation, edema or hemorrhage.

SYMPTOMS

The cardinal symptom characterizing cerebral spastic paralysis is a spastic rigidity of the muscles, varying in location and intensity with the motor areas involved. Sharpe[3] very clearly defines where the lesions may be encountered in the various degrees of paralysis.

In a spastic paraplegia, which results from a lesion situated over the upper portion of both motor areas, both legs are affected. Very often it is overlooked for several months after birth, but eventually the mother notices a rigidity of the muscles. When the child begins to walk, the posture is characteristic. There is a talipes equinus which varies in degrees of intensity. The heels are everted and the knees approximated. However, if the lesion is over the upper two thirds of the motor tracts, the arms as well as the legs are involved. In this condition, the feet are crossed in the pes equinus or equinovarus position. The whole body may at times become rigid. The hands are used awkwardly and very often it is difficult to raise the arms or to abduct them. In rare cases of extreme spastic diplegia, in which practically the entire muscular system is involved, the complete motor area of both cortical hemispheres is affected. However, the condition one most frequently encounters is that in which the lesion involves one cortical hemisphere and produces either a monoplegia—the impairment of a leg or arm on the opposite side—or a hemiplegia characterized by spasticity of both the arm and the leg or the entire side of the body opposite the lesion. The elbow and wrist joints are flexed and the arm is held close to the body. There is a flexion at the knee and hip joints and plantar flexion at the ankle joint. A slight paralysis may be found in one facial nerve. Sensory disturbances are rare. The knee jerks and reflexes are accentuated. Unilateral squint is often present.

Flexion contractures of the muscles are the product of hypertonicity and are accompanied by a corresponding overextension of opposing muscle groups, the extensors. There are, however, milder forms of spastic paralysis in which merely an awkwardness in gait is manifested. Athetoid movements and convulsions may often be observed in these patients.

The majority of cases, to be more exact 60 per cent., are due primarily to intracranial hemorrhage.[3] It is interesting to note that in these cases the intracranial pressure is not as great as in those in which intracranial tumors exist. Occasionally, however, one can make out the beginning of papilledema and "choked disk," which are so characteristic of intracranial tumors. The optic disk margins are found blurred and edematous and the retinal veins are dilated.

It is not difficult to make the diagnosis of spastic paralysis, since it is based on the spastic condition of the muscles, the increased reflex excitability, and the lack of muscular coordination. Very often, however, there are no focal symptoms which are indicative of the origin.

If permanent degeneration of the pyramidal tract has occurred, it is almost fruitless to attempt alleviation, for it is needless to say that destroyed nerve elements possess very little, if any, regenerative powers. Unless the basic elements, such as hemorrhage, are relieved soon after their occurrence, it will be futile to attack the brain in the hope of relieving the spasticity of the muscles. The same principle applies to brain cysts and other destructive tumors. Consequently, it is obvious that the treament, for the most part, is of necessity symptomatic and entirely dependent on the degree of spasticity and the extent of muscular involvement.

In addition, the surgeon must take into consideration the mental state of the patient. The degree of mental impairment is often such that surgical procedure is contraindicated. To make the after-treatment effective, intelligent cooperation is essential. These unfortunate beings are very often forced into seclusion and are dependent on their limited resources for mental development. As a result, their intellectual growth is often retarded. As a matter of fact, in a number of cases in which we operated, following resection of the posterior roots, we noted a marked improvement in mentality, which we attribute partly to the more favorable surroundings during their stay in the hospital.

TREATMENT

The treatment of spastic paralysis must, therefore, consist in restoring to the higher centers the power of useful, coordinate movement in the limb or limbs afflicted; in restoring muscle balance; in overcoming the ataxia, and in training the muscles to respond quickly and accurately to the normal centripetal stimuli of physiologic activity.

In the mildest patients, possessing a high grade of intelligence, it is quite feasible to accomplish this by long continued developmental and educational exercises. A perfect cure is never to be anticipated with this or any other method of treatment, but useful function can frequently be attained. In very young children, the Montessori system of education will be found useful in exercising the upper extremities. Such educational training must be carried through many years, and various types of exercises, apparatus and useful, purposeful motions (as in the curative workshops of adults) may be improvised to meet the demands of the case.

When the spasm of the muscles is greater and contractures exist to a greater or less degree, mechanical intervention becomes necessary in order to equalize the lack of balance in the muscles at the afflicted joints, before the educational training may be successfully carried out.

OPERATIVE PROCEDURE

Such operative procedures are ordinarily employed to weaken the power of the stronger spastic groups, which are as a rule constant in all cases. The muscles usually afflicted are the flexors of the wrist and fingers, the pronators of the forearm, the flexors of the elbow, the abductors of the thigh, the extensors of the knee and the plantar flexors of the foot. The following outline gives in brief the courses of treatment open to the surgeon:

1. Muscle and Tendon Operations:
    - (*a*) Forcible redressment and overcorrection.
    - (*b*) Tenotomy.
        1. Subcutaneous.
        2. Open.
    - (*c*) Tendon lengthening.
        1. Subcutaneous.
        2. Open.
    - (*d*) Muscle resection.
    - (*e*) Tendon transplantation.
    - (*f*) Muscle implantation.
2. Brain Operations:
    - (*a*) Trephining and evacuation of blood clots.
    - (*b*) Decompression.
    - (*c*) Excision or evacuation of cysts or tumors.
3. Motor Nerve Operations:
    - (*a*) The causation of temporary paralysis by means of various injections (Allison's method).
    - (*b*) The partial resection of the motor nerves leading to the spastic muscles (Stoffel's operation).
4. Centripetal (Sensory) Nerve Operations:
    - (*a*) Resection of the posterior nerve roots (Foerster's operation).

The choice of operation depends on the etiologic factor and on the necessity of weakening the spasm of definite muscle groups, to a degree approaching normal muscle tonus. Almost all the operations enumerated allow of fairly exact dosage, which is usually determined by the amount of overcorrection used or the amount of nerve tissue resected.

The patient must possess at least such promise of sufficiently high intelligence as to warrant a hope for the success of the educational after-treatment. In many cases, the intelligent mind seems to be awakened by a successful nerve operation, such as the Foerster operation, but too much ought not to be anticipated from this source. There are many cases in which the spasm is so completely in control of all muscle function, that any hope of improvement that might have been entertained must be abandoned. This is true in cases in which the involvement of the upper extremities is so great that spasm from their use will of itself spread to the corrected lower extremities in such measure, as to preclude success. The severe ataxic, the epileptic, the choreal and the athetoid cases are confessedly hopeless, and the patients are not to be operated on, except possibly for a few tenotomies, etc., to permit the improvement of certain fixed attitudes.

Forcible redressment with overcorrection is seldom advisable. The tearing and rupturing of muscle fibers, tendons or ligaments leads to great pain, which of itself calls forth muscle spasm and defeats the very object to be accomplished. One indication for this procedure may be found in the severe cases of spastic pes valgus, which can often be markedly improved by forcible correction. The simple fixation of a joint or member in maximal overcorrection under anesthesia, without the use of any force whatever, will be found very useful in mild spasm of the shoulder or elbow joints.

Tenotomy may usually be accomplished subcutaneously. When important nerves or blood vessels in the neck might be endangered, it is better to resort to the open operation. Tenotomy does not admit of exact dosage, and when there is danger that the opposing muscles will assume the permanent balance of power and give rise to the opposite deformity (as in the foot), it should never be done. In the correction of the flexion contracture at the knee, one of the weaker hamstrings should always be left intact, lest the unopposed strength of the quadriceps result in a permanently extended knee and a stiff knee gait.

Subcutaneous tendon lengthening presents the same disadvantages as to dosage as does simple tenotomy, and is of little value. The open tendon, lengthening with only a small amount of overcorrection, should be the operation of choice for the Achilles tendon, as spastic calcaneous usually results from a too free lengthening of this tendon.

Tendon shortening is rarely found necessary.

When muscles have no tendons (pronator quadratus), or when the tendons are not accessible, muscle resection or the freeing of the muscle body from its periosteal origin (Soutter's operation) is indicated.

It will be seldom found necessary to transplant tendons, because of the usual good strength of the active opponents. It is quite possible that in excessive pronation of the forearm, the muscle and tendon operations advised by Tubby for the relief of this condition, due to other causes than Little's disease, might be found useful. We know of no case of Little's disease in which this has been tried, but there is no reason why it should not be successful in suitable cases. This operation consists of the transference of the tendon of the pronator radii teres into the ulna, the resection of the pronator quadratus, and the transference of the flexor carpi ulnaris around the wrist to the radial side of the back of the hand.

AFTER-TREATMENT

These operations are all to be followed by a period of fixation in plaster in an overcorrected position. Care must be taken that the amount of overcorrection is quite exact, lest a deformity in the opposite direction should result. The greatest care must be taken with the foot. On the other hand, the overcorrection of the spasm of the adductor muscles must be complete. After a few weeks, the plaster may be temporarily removed and passive motions begun.

Too long fixation is harmful. It renders the joints stiff and painful, and often exudates may be found in the joints, especially the knee joint, after three to four weeks of continuous fixation.

Passive motions produce pain, and often give rise to all sorts of nervous or even neurotic outbursts. We have in mind one case of most severe spastic contractures of the lower extremities, beautifully overcome by means of a Foerster operation, in which the permanent muscle shortening and resulting deformity had to be overcome by tenotomy and overcorrection. This patient complained of so much pain in various muscle groups, and became so neurotic and even hysterical at the periods of massage and muscle training that these had to be abandoned, and the success of the operation was jeopardized for a long time. The patient was finally taught to walk, only to have an attack of influenza six months later, followed by such intolerable pain in the left hip joint that she absolutely refused to get on her feet again.

Passive motions are first carried out in bed and consist of abduction, adduction and rotation of the hips, and flexion and extension of the knees and feet.

As soon as possible, the motions must be performed actively. Finally the children are to be supported in an upright position by means of braces, apparatus or hand rings and compelled to learn, first, to stand and then carry out exercises in a standing position, keeping the head upright and the body erect at the same time. Often they can stand erect by merely leaning against a wall.

Foerster has called attention to the importance of teaching the use of the hips, knees and feet in their physiologic sequence. He noted that the children readily learned to shuffle along with the hips, knees and feet held straight but stiff, and after they had once learned to walk in this fashion, they could not be taught or compelled to walk in the normal manner. He advises that the children be placed with their faces against the wall and compelled to learn to flex their knees and ankles in this position. After this, they are to be taught to walk in "goose step" fashion, supported by crutches, walking chairs, etc.

For all this, almost unbelievable patience is absolutely necessary. Often six to eight hours a day are consumed in carrying out these stepping exercises, together with the finer movements of rotation of the thighs, flexion and extension of the ankles and toes, pronation and supination of the feet, and so on. Foerster recommends the continuation of this educational regimen for several years.

It is just in this particular that we have all fallen down, especially in this country. Few clinics have enough teachers and gymnastic instructors so that such instruction may be carried out for more than a few hours a day, and that for a few months only. Each case needs a veritable Mrs. Macy.

The operations on the brain have been carried out for the purpose of relieving the cause of the spasm. It is obvious that these procedures are indicated only in cases in which the spasticity arises from easily accessible portions of the cerebral tract and is not caused by disease or degeneration of the spinal pyramidal tract. We know of no way of accurately differentiating these cases into their appropriate groups, except in cases of undoubted birth trauma, in which examination of the eyegrounds suggests an increase in the intracranial pressure.

If, immediately after a difficult labor, the symptoms of intracranial irritation or pressure are marked and hemorrhage or a brain cyst can positively be diagnosed, the immediate decompression and evacuation of the clot or cyst is the operation of choice.

Unilateral convulsions alone, even if severe, are no indication for this operation, except in the presence of asphyxia and cyanosis. Mild unilateral twitchings not amounting to actual convulsions, even combined with asphyxia and cyanosis, are to be left alone, as the children usually recover with perfect muscular control.

To be successful, decompression must be performed within the first week of life. It has never seemed to us that the late trephining, with or without the evacuation of any possible cysts, could be of much avail on account of marked destruction of brain tissue. The later experiences of Sharpe and Farrell confirm this.

The causation of temporary paralysis by the injections of various drugs into the nerve trunks (Allison's method) has not yielded permanent results. The muscles are at first completely paralyzed, then only partially so, but finally the complete restoration of the previous nerve function occurs and the case is necessarily in the same state of muscle imbalance as before.

The partial resection of the motor nerves supplying the definite groups of overspastic muscles (Stoffel's operation), is based on a correct appreciation of the mechanics involved, and if it can be successfully carried out in precisely the same manner as the originator of the operation recommends, it will fill a definite place in the treatment of this affliction. With it, exact dosage and diminution of harmful muscle contracture ought to be secured, regardless of the appalling number of individual nerves it will be necessary to resect, even in the milder cases. The possibility of accurately carrying out this procedure, which must, of course, always be anatomically exact, in the larger common nerve trunks, as the sciatic, median, etc., depends on absolute constancy of the nerve pattern, and we know of no proof that this exists except Stoffel's own claims.

The possibility of regeneration of the resected nerve fibers must not be lost sight of in this procedure or in the Foerster operation, and sufficient nerve must be resected to avoid this condition.

The resection of the posterior nerve roots of the spinal cord, like the resection of certain parts of the motor nerves, does not aspire to remove the pathologic cause of the spasticity. It simply reduces the number of motor impulses which reach certain muscles or muscle groups and in this way relieves the spasm and brings the muscles to a state of contraction closely resembling normal muscle tonus. The same thing may be accomplished by interruption of the fixation reflex arc in any part of its course, and as we have shown in a previous chapter of this paper, is admirably accomplished by nature, by causing a degeneration of the posterior tracts of the cord in tabetic patients. Foerster selected the posterior roots, since this is the only part of the sensory system accessible to the surgeon's knife. The dosage is naturally dependent on the amount of involvement of the various muscle groups. The various nerve segments that supply these spastic muscles may be readily ascertained from tables published in any standard neurology.

METHODS OF DISTINGUISHING SENSORY AND MOTOR ROOTS

Various methods have been devised for the purpose of distinguishing between the sensory and motor roots, all of which may be classified under the following headings: physiologic, morphologic and anatomic.

The physiologic methods are dependent on electrical stimulation of the nerve roots, and are, perhaps, the most accurate, if properly and successfully carried out. On account of the close proximity of the posterior and anterior roots in the cauda equina, it is often impossible to apply the electric current to one root without stimulating a nearby root. For example, an electric current may be passing through a sensory root, which in turn is transmitted to a neighboring motor root, causing a muscle contraction, leading one to believe that the stimulated root is a motor nerve, whereas in reality it is a sensory nerve.

The morphologic methods, as the name implies, depend on the morphology of the nerve roots for their distinguishing factors. These methods are absolutely unreliable and may be discarded without further discussion.

The method we have used is the anatomic, and depends on the ligamentum denticulatum for the recognition of the posterior roots. The ligamentum denticulatum is a transparent, film-like membrane attached to the posterior roots, and is absent from the anterior roots. It is easy to recognize, and is very constant. The use of this method is reliable, and has served admirably in our series of cases. The location of the nerve to be resected is determined by the spinous process, under which it takes exit. A guiding spinous process may be permanently located by biting off its tip with a Rongeur forceps at the beginning of the operation.

If the proper nerve roots are selected, the spastic component of the paralysis may always be relieved and this, after all, seems to be the pertinent factor on which is based these children's inability to walk. When Foerster first described his operation, a great number of surgeons enthusiastically resected the posterior roots and were highly gratified by the immediate relief of spasticity which was obtained. But, as is often the case, they soon forgot about these poor patients and left them to work out their own salvation, with only an indifferent educational after-treatment. These patients quickly resumed their former habits and after a short time the spastic condition again returned. In our opinion, it is the lack of after-treatment rather than the regeneration of the posterior nerve roots which has caused most of the failures in operations of this kind.

MORTALITY

A word in regard to the mortality in resections of the posterior roots may not be amiss. In a series of twenty-two cases, we have had two deaths, a mortality rate of 9 per cent. In the first case, death resulted from shock following chloroform anesthesia. In the second case, death was due to a purulent cerebrospinal meningitis. In all but our first case, we have been blocking off the higher centers of the cord and brain by means of injection of procain into the cord immediately above the seat of operation. This procedure is carried out for the prevention of shock and also for the purpose of using as little anesthetic as possible. After the bony structures have been removed it is usually possible to perform the remainder of the operation under the anesthesia produced by the procain injected into the cord. The use of this method permits a much freer handling of the cord, and, after all, this seems to be the most dangerous part of the operation. If all manipulations are gently and quickly carried out in combination with the injection of procain, the mortality rate of resection of the posterior roots should not be any higher than the average severe laparotomy. In any event, it should not exceed 5 per cent.

After these operations on the nerves, it will often be found necessary to overcome the permanent contractures and shortening of the muscles by means of the tendon and muscle operations previously described. These operations will differ in no way from those done primarily for the relief of the spasm except that overcorrection and fixation need not be so long.

The gymnastic and other educational exercises must be painstakingly carried out, as has already been mentioned.

CONCLUSIONS

We should like to point out several salient features in the study of cerebral spastic paralysis:

1. Little's disease is not a medical entity, but rather a syndrome resulting from various etiologic factors.
2. No stereotyped procedure can be used in the treatment of these cases, and the treatment is dependent on the etiologic factors, the condition of the muscles themselves, and the intelligence of the patient.
3. All forms of treatment will fail unless the educational after-treatment is conscientiously and painstakingly carried out.

ABSTRACT OF DISCUSSION

Dr. George B. Packard, Denver: We are apt to forget that all muscles are spastic in these cases. If one has, for instance, had a calcaneus deformity follow a tenotomy for equinus, he will never forget that all the muscles are spastic. The final outcome is largely a question of balance. If that is true, I often wonder whether we are not overlooking the value of tenotomy. In doing tenotomies, if you get just the right length of tendon, the results are excellent. In order to prevent the recurrence of the trouble, one must follow up the after treatment—that is, mechanical treatment—particularly at night. My method is not to have the patient wear a brace in the day time for more than a few weeks, but at night, when he is inclined to curl up the leg or foot it should be worn for several months; and in that way, I prevent the recurrence of the trouble. Of course, if we do not get just the right length of tendon, we can operate later to lengthen it still more; but the point is to get just the right length, in order to maintain the balance of the muscles.

Dr. Ethan H. Smith, San Francisco: One of the most important features in these cases is the anesthetic. I have found that patients suffering from this disease bear general anesthesia less well than almost any other surgical cases. I am glad that the point was made of holding the parts in correction during sleep. That is important not only in this, but in all other conditions involving the lower extremities. The weight of the bed covers at night has a tendency to cause relapse of the deformity after correction in nearly all deformities of the lower extremity, and a carefully made night shoe or night apparatus is necessary in all cases.

Dr. Walter G. Stern, Cleveland: I agree with Dr. Packard that we must be careful not to overdo the correction. That is why I said that in lengthening the Achilles tendon, it is preferable to do an open tendon lengthening, in which we can accurately measure the amount of lengthening that we wish to make. The question of night bracing has puzzled me. Most children with this disease are not of high intelligence, and they do not bear well the application of rigid braces at night time. We must either fight with all the people around the hospital or lessen the bracing at night.

Of late years, we have been giving gas anesthesia and blocking the cord after we get to the dura by putting in procain. Most spastic cases will show tremor, etc., when first going under the anesthetic; but if the anesthetic is given by an expert anesthetist, these children take anesthesia as well as any one. In Ohio, we have not had very serious epidemics of infantile paralysis. It is my experience that, in comparison with this disease, I see a relatively high proportion of spastic cases. There is hardly a day passes that I do not see a new case of spastic paralysis. The condition is more frequent than is usually believed, because the general practitioner does not recognize it.

Dr. John Ridlon, Chicago: What is your guide to the operation on the Achilles tendon?

Dr. Stern: My guide is the desired position of the foot. Of course, you can get the same result by doing a subcutaneous tenotomy and putting the foot up in plaster in a right angle positon. But we have the fixation reflex there, by which the muscle is made to contract; and in doing a subcutaneous tenotomy alone, the contraction will pull up the severed end of the tendon too far. In the Achilles tendon, one can do an open tendon lengthening and suture the tendon at just the amount of connection one wishes to get.

Dr. Ridlon: I do not know just how much you get.

Dr. Stern: That depends on your judgment. I do not correct much beyond a right angle. I had some sad experiences, and found, as Dr. Packard did, a paralytic calcanous resulting. I thought that the method was not so much in fault as my own judgment, therefore I put the foot up in a lesser angle. On visiting the clinics of Chicago, I found that many men there use the open operation; and in trying that, I found that it was much more accurate as to the amount of lengthening, and I have had no bad results since.

STREPTOCOCCUS PNEUMONIA AND EMPYEMA

AN INFECTION AFFECTING EIGHT MEMBERS OF ONE FAMILY WITH SEVEN DEATHS

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In connection with the report of Miller and Lusk,[1] based on an epidemic of streptococcus pneumonia and empyema at Camp Dodge from March to May, 1918, we wish to report a similar infection affecting eight members of one family with seven deaths, occurring in the city of Valley Junction, which adjoins Des Moines, and is about 17 miles south from Camp Dodge.

These cases developed at the same time as the outbreak of the disease at Camp Dodge. The family consisted of the father, the mother and seven children ranging in ages from 4 to 24 years. The first member of the family to be taken ill was a son, aged 18 years, who manifested the first symptoms, March 26, 1918, and died three days later; the father, aged 46, and three children, aged 4, 15 and 21 years, respectively, became ill, March 29, 1918, one dying, April 1, two, April 3, and one, April 4. The clinical diagnosis of the first five cases was acute pneumonia. Two sons, aged 8 and 24 years, were taken sick, March 30, the first dying, April 7, and the second, April 15.

In each of the last two cases a left empyema developed, and aspiration on the exudate formed a part of the treatment.

April 2, a daughter, aged 12 years, was the eighth member of the family to become ill, and the only one to survive.

The acute pneumonia terminated in a left empyema, the exudate being removed by aspiration at first and later by rib resection and drainage, the discharge persisting for three months. The corresponding lung contracted and obliterated to a large extent.

The mother was apparently not ill at any time.

A postmortem examination was permitted in only two of the cases, being made by one of us (Dr. Luginbuhl) April 3, 1918, on the father and the 4-year-old daughter. The anatomic changes were identical in the two instances: a bronchopneumonia more than a lobar type, with a seropurulent exudate in the left pleura, and a fibrinopurulent pericarditis. These changes correspond to those described by MacCallum[2] in the Camp Dodge epidemic.

While the bacteriologic examinations were very incomplete, the etiology was evidently identical in the eight cases.

Cultures obtained from the exudate in the two necropsies produced a growth of the *Streptococcus hemolyticus*, and a similar micro-organism was isolated from the pus obtained by drainage in the last case of the series.

There were no definite predisposing conditions to be determined in these cases, except the insanitary surroundings in which the family lived. A preceding infection, such as a measles or tonsillitis, was not present. Each case was characterized by a sudden onset.

It will be noted that the virulence of the infection was more marked in the first five cases, there being a longer period of illness in the next two fatal cases, while the last patient of the series recovered.

The similarity between the cases reported herewith and those of the Camp Dodge epidemic suggests a common infective agent with variable degrees of virulence.

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[1] Miller, J. L., and Lusk, F. B.: Epidemic of Streptococcus Pneumonia and Empyema at Camp Dodge, Iowa, The Journal A. M. A., Aug. 31, 1918, p. 702.

[2] MacCallum, W. G.: Pathology of the Epidemic Streptococcal Bronchopneumonia in the Army Camps, The Journal A. M. A., Aug. 31, 1918, p. 704.

Legislation for Physical Training.—In an article on "State Legislation for Physical Training," Dr. Thomas A. Storey, inspector of physical training for the state of New York, shows that since May 15, 1916, seven states have enacted school physical training laws. These states and the dates of the legislation are as follows: New York, May 15, 1916; New Jersey, Feb. 13, 1917; Nevada, March 21, 1917; Rhode Island, April 19, 1917; California, May 26, 1917; Maryland, March, 1918; Delaware, April 10, 1918. Illinois passed a law, June 26, 1915, but no financial provision was ever made for carrying it out. The program in New York requires six hours a week of physical training for every pupil above the age of 8 years in all elementary and secondary schools. In New Jersey the required training time is at least two and one half hours in each school week. In Nevada the carrying out of the law is assured by a tax of 5 mills on $100 of assessed valuation of all the taxable property of the state. In the other states appropriation of certain sums is made by the legislature. In California the time requirement in the elementary schools is twenty minutes each school day, and in the secondary schools at least two hours a week. Similar legislation has been proposed and considered in other states.

Military Medicine and Surgery

CERTAIN RESIDUALS OF EPIDEMIC CEREBROSPINAL MENINGITIS OBSERVED IN THE ARMY

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In the period from December, 1917, to February, 1918, a number of cases of epidemic cerebrospinal meningitis developed at Camp Beauregard, La. The patients were treated with specific serum administered both intravenously and intraspinally, and a number of them made uneventful recoveries from the infection. After a four or five weeks' period of convalescence in the base hospital at the camp they were as a rule granted a sixty days' furlough at home. On return from their furlough some of the men were found still to have certain residuals owing to which they were unable to go back to duty. Others did go back to duty but were found within a few days to be unable to perform it. All such patients were therefore readmitted to the base hospital. After a further period of from five to eight weeks' treatment and rest in the hospital they were still not in condition to go back to duty, and eighteen of them were on July 29 transferred to U. S. Army General Hospital No. 30, Plattsburg Barracks, N. Y.

At various other times and from other camps eight other postmeningitic patients were received at this hospital, and thus a rather unusual opportunity presented itself of studying the residuals of epidemic cerebrospinal meningitis.

In the past ten or twelve years a great deal has been published on the subject of epidemic cerebrospinal meningitis; but these publications have dealt almost exclusively with the acute phases of the disease, its bacteriology, modes of transmission, prophylaxis and specific therapy, and not with the residuals.

The cases that have thus come to our attention present a striking and fairly uniform syndrome made up of the following elements, given here in the order of their frequency:

1. Limitation of flexion of the spinal column.
2. Undue fatigability.
3. Pains in back, legs and head.
4. Tendency toward dizziness and faintness.
5. Muscular weakness.
6. Tendency toward blurring of vision associated with photophobia.
7. Impairment of appetite and sleep associated with a state of undernutrition.

The limitation of flexion of the spinal column is shown in all cases by inability to stoop over far enough to touch the toes with the tips of the fingers without bending the legs at the knees. One or two of our patients, on arriving at the hospital, were able by special effort to come within 6 inches, but most of them could not come within a foot, and one could stoop but very slightly. All have told us that prior to their attack of meningitis they had been able to do this, and some had been able to stoop far enough to place the palms of the hands on the ground.

The limitation of flexion is further shown in the cervical region by the patients, in the majority of cases, being unable to flex the head on the trunk so as to touch the sternum with the point of the chin—which most people normally can do. Some patients cannot come within 2 inches of touching.

Undue and unwonted fatigability is present in all cases, although it varies a good deal in degree. In one case, going up a flight of stairs or a short distance up hill or a few blocks even on level ground results in getting out of breath, palpitation, weakness, trembling, aches in the back and legs, and a feeling of exhaustion. In another case, the fact of undue fatigability is to be noted only by comparison with former endurance or with the endurance of other men in the organization.

Pains in the back, legs or head are present in all cases. In some cases it is constant and so severe as to make it impossible to maintain with comfort any position for more than a few minutes. In other cases it is slight or only occasional, or develops only on stooping or exertion. The favorite locations are, in order of frequency, the small of the back, the back of the head and upper part of the neck, the legs behind the knees, and the back between the shoulder blades. In some cases there is tenderness to deep pressure, and in one case the head is so sensitive that laying the hand lightly on top of it causes an increase of pain. In two cases there is great soreness in the tip of the coccyx, the patients having to sit either on one buttock or the other.

A tendency toward dizziness and faintness is present in almost all our patients, but also varies in degree. In some cases any sudden movement starts things whirling or causes black spots to come before the eyes, while severe or prolonged exertion causes the patient to become faint, lose consciousness, and fall; at least one of our patients had come to us with a transfer card diagnosis of "epilepsy following meningitis." In the milder cases even severe exertion brings on only slight or momentary dizziness. Stooping more than other movements excites this symptom. Arising from bed in the morning often brings it on. It develops more readily in the unshaded sunlight, especially on a warm day.

In the headaches, dizziness, faintness and losses of consciousness, and in the fact of these symptoms being especially apt to be brought on by exertion, stooping, sudden movements, or exposure to the sun, the postmeningitic condition closely resembles the well known condition that persists for years following severe cranial traumatisms.

Muscular weakness, as existing independently of the fatigability and of the pains, is shown particularly by feeble hand grips in more than half of our cases. Usually both grips are weakened, but often in an unequal degree. One patient, in other respects having a rather mild case, formerly as "strong as a tiger," is hardly able to turn the faucets in the lavatory.

The tendency toward blurring of vision is very common but also variable in degree. It becomes manifest when patients attempt to read, especially if the print is fine. After a few minutes or half an hour the letters begin to "run together;" if the patient rests a while he can continue the reading, but unless he has rested an hour or more the blurring will come on again more quickly than the first time.

It would seem that this trouble is due to a weakness of the ocular muscles; in some cases close application brings on diplopia; the ocular movements, however, as ordinarily tested, are as a rule not impaired. In those cases in which the tendency to blurring of vision is most marked there is also a degree of photophobia; at least two of our patients have had to wear smoked or colored glasses. In these cases there is sluggishness and limited excursion in the pupillary reaction to light; moreover, on continued exposure to bright light, the initial contraction soon gives way to relaxation; and it may be that the photophobia is dependent at least in part on weakness and fatigability of the concentric muscle fibers of the irides with resulting lack of shielding of the retina.

The impairment of appetite and sleep, sometimes associated with a state of slight subnutrition, is perhaps a secondary phenomenon. Many of our patients were formerly leading active outdoor lives, but have since been forced by their illness to remain almost wholly without exercise for months. The loss of sleep is almost invariably associated with pain; in some cases the patients have difficulty in getting into a comfortable position for sleep and toss around for hours before finally falling asleep; others fall asleep quickly, but wake up in the night on account of pain developing from the strain of being in one position.

Our cases have shown very considerable variation in severity of the symptoms and degree of disablement, as compared with one another, but not in the syndrome considered qualitatively. The quantitative variations seem to depend in part on severity of the original infection, or possibly the patient's resistance to it, and in part on the length of convalescence. The usual course is characterized by a very pronounced degree of disablement at the beginning of convalescence, progressive improvement for about a month or six weeks under rest without special treatment, and from then on an almost stationary residual condition persisting apparently indefinitely—in our cases from three months to over a year thus far.

Shortly following the admission of these patients to this hospital they were divided into groups, according to the degree of disablement and were placed under a regimen of graded hikes and exercises, such as neck bending and body bending. This was followed by striking and rapid improvement in some cases and in distinct though slight improvement in almost all within a month. Several of the patients can now bend over and touch the toes with the tips of the fingers without strain or pain and without getting a headache or becoming dizzy; their endurance has increased; and one of them took part in a lively game of baseball lasting more than an hour, and then felt fit to play another one.

It is, of course, too early to tell whether or not these patients, or any of them, can be completely restored; but our experience has already shown that in practically all of them the condition, which remains stationary for months under mere rest, can be confidently expected to improve at least to a certain extent under graded hikes and exercises.

Some explanation is perhaps due for presenting our observation in so unfinished a form. Our justification lies in the urgency of the practical problems that are involved. Almost in every cantonment in the country cases of meningitis have occurred since the beginning of mobilization. The postmeningitic syndrome has apparently received very little recognition, and only the more severely disabled cases have forced themselves on the attention of medical officers who have disposed of them in one way or another as cases of hysteria, neurasthenia, "psychoneurosis following meningitis," "neurosis due to lumbar puncture," neuritis, etc.

It seems to us not unlikely that many patients that have been returned to duty and even sent overseas might, on examination by one familiar with this syndrome, be found to be really incompletely restored and hardly fit for duty. In such cases it would be obviously in the interest of both the patients and the government to institute the necessary treatment prior to returning the soldiers to duty.

Perhaps the simplest way of meeting the situation would be by ordering the transfer of all patients with epidemic cerebrospinal meningitis, on their recovery from the infection, to some one designated Army hospital for convalescence and such further observation and treatment as they may require.

THE MEDICAL ORGANIZATION OF THE ITALIAN ARMY

THE NEUROPSYCHIATRIC SERVICE

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Dr. Heiser,[1] last January, gave a thorough and valuable account of the military medical organization at the Italian front. Although the article had been written before the Italian retreat of October, 1917, during which much material was lost and three quarters of the medical units had to undergo considerable changes, yet the medical service at the front in its efficiency remains as Dr. Heiser described it. There are about 700,000 hospital beds within the zone of the armies, but their localization must not be revealed.

The medical service outside the zone of the armies is under the direction of the Director-General of the Army Medical Service, who is attached to the war office and whose position corresponds to that of Surgeon-General in the United States Army. He controls the so-called reserve hospitals, which are scattered all over the kingdom. Aside from these there are also other hospitals called territorial (about 160 in all, with a total of 30,000 beds), which are under the direction of the Italian Red Cross. There were in Italy, in the spring of 1918, 1,250 hospitals, including those of the Red Cross, with a capacity of 330,000 beds. These, added to the 700,000 beds existing within the zone of the armies, make the total military hospital capacity of Italy more than a million beds.

Considering that the area of Italy is 110,623 square miles, if we deduct the two provinces invaded lately and the others included in the zone of the armies (about 20,000 square miles), there are in Italy, aside from the 700,000 beds within the war zone 3⅔ beds per square mile.

Under the Director-General of the Army Medical Service are twelve colonels of the medical corps, each attached to an army corps and with jurisdiction over the hospitals within his army corps. Nominally there are twelve army corps, numbered from one to twelve, but practically there are eleven at present, as the fifth (Verona), being in the zone of the armies, is not controlled from the war office, but by the general staff.

The 1,250 hospitals have been distributed among the eleven army corps, according to the distance of the corps from the battle front, the building and transportation facilities and the climate. So in the district of the fourth army corps (Genoa) there are 241 hospitals (with twenty beds per square mile), because almost all the hotels of the Italian Riviera were taken over by the government and transformed into convalescence homes and hospitals, the climate of the Riviera being suitable for patients suffering from tuberculosis and other exhausting diseases. In the districts of the Second, Third and Sixth Army Corps (Alessandria, Milan and Bologna), which are located nearer to the battle front, there is an average of 7, 6½ and 5⅓ beds per square mile; while in the district of the Twelfth Army Corps (Sicily), which is far front the front, there is less than one bed per square mile. The effectiveness of Italian base hospitals has been greatly increased during the last few months. In the single district of Milan there are 53,000 beds, against 37,000 beds in November, 1917.

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[1] Heiser, V. G.: Some of the Accomplishments of Italian Medical Men in the War, The Journal A. M. A., Jan. 5, 1918, p. 24.

In each army corps district there is a hospital called "principale," with which all the others are connected. A colonel or a lieutenant-colonel of the Medical Corps is at the head of the "principale," while the other hospitals are directed by a major or a captain, according to the number of patients. Most of the hospitals are for general patients, but many are reserved for certain classes of patients. In the matter of specialization, one is impressed with the number of categories and branches which have been installed and are successfully operated notwithstanding the difficulties and emergencies of the present time. The specialized hospitals include medical, surgical, ophthalmic, trachomatous with secretion, trachomatous without secretion, neurologic, orthopedic, infectious, contagious, psychiatric, stomatologic, venereal, dermatologic, otologic, isolation, malarial, tuberculous, crippled, climatic, convalescent, invalids', autolesionist,[2] diagnostic for tuberculosis and medicolegal, and there are schools of reeducation for the blind, agricultural schools for invalids, etc.

THE NEUROPSYCHIATRIC SERVICE

The Neuropsychiatric Service is one of the best services in the Italian army. Italy, having entered the world war nine months after the other allies, had time enough to study all the problems connected with the medical organization and was in a position to avail herself of the experiences of the other nations. While in France the Neuropsychiatric Service as a special unit was organized a long time after the war broke out, in Italy it started with the war. Moreover, Italy led the other nations in creating the so-called advanced neuropsychiatric sections, which are first line hospitals or sections of field hospitals, where the neuropsychiatric patients are first taken for diagnosis, distribution and eventual treatment. These advanced neuropsychiatric sections of the armies originated in Italy in September, 1915, three and one-half months after Italy declared war, after a short experimental period. In France, where the Neuropsychiatric Service has now reached perfection, it was not until April, 1916, that a committee composed of Drs. Chaslin, Colin and Truelle, chosen by the medicopsychologic society of Paris, proposed and obtained the creation of similar sanitary sections.

In order to give an idea of the whole Neuropsychiatric Service of the Italian army, distinction must be made between the neuropsychiatric service in the zones of the armies, and the psychiatric and neurologic services outside the war zone.

The entire Neuropsychiatric Service is under the supervision of Dr. Tamburini, professor of psychiatry at the University of Rome, who is the consulting psychiatrist general to the war office.

1. *The Neuropsychiatric Units in the Zones of the Armies.*—These are mixed formations composed of:

(*a*) Advanced Neuropsychiatric Sections: These, as stated, are located in the first lines, either as wards of field hospitals or as separate hospitals. They have a limited number of beds, ranging from ten to 150. The neuropsychiatric patients are sent there either directly from the firing lines or from other field hospitals. A first examination separates the mild cases from the serious ones. The former patients are kept there and treated for a short period of time, after which most of them recover and are sent back to their regiments, save a few who require further observation or treatment, and these are sent to the neuropsychiatric center of the respective army. The latter are sent directly to the nearer neuropsychiatric center, after all the important anamnestic data, the clinical history and a provisional diagnosis have been obtained.

(*b*) Neuropsychiatric Centers of the Armies: These are units, one for each army, located in the rear, usually in the same town where the director of the Army Medical Service of the army resides. They occupy large, modern hospitals fitted with apparatus for diagnosis and physical therapy, where patients sent from the advanced neuropsychiatric section are received and submitted to a more accurate and rigorous examination. Here those functional cases, emotive, confused, etc., which, if transferred directly to reserve hospitals outside the war zone, as it was customary at the beginning, would become chronic, are treated until the patients are fit for service again. Those suspected of malingering are kept under strict observation until they are exposed or found mentally affected, in which case they are either recommended to a board of survey for medicolegal decisions, or are sent with the other serious cases to the reserve psychopathic hospitals outside the war zone. This occurs only when all means of treatment have failed and when the diagnosis of psychoses or organic neurologic lesion requiring long treatment is made. Recently, after the creation of the distribution center of Reggio Emilia, it was decided that all such cases should be directed to this center, for whatever decision.

The whole neuropsychiatric service of the zones of the armies is under the direction of neurologists and psychiatrists (one for each army) of unquestionable merit, chosen from among the best in the service, who have been connected for many years with neuropsychiatric clinics of the universities. A staff of trained neurologists and psychiatrists is attached to each neuropsychiatric center.

2. *The Neuropsychiatric Service Outside the War Zone.*—While the neuropsychiatric units at the front are mixed formations, a condition dictated by emergency and practical reasons rather than by scientific ones, the units outside the war zone are either neurologic or psychiatric. These include reserve military hospitals, university clinics and asylums, and constitute (*a*) the psychiatric sections and (*b*) the neurologic centers.

(*a*) The Psychiatric Service: This deals with two kinds of patients: (1) Psychopaths requiring further clinical observation or treatment or medicolegal decision, and (2) psychopaths that have to be interned in asylums or state hospitals. For practical purposes it has been decided to send the psychopathic soldiers to the hospitals nearest their birth places. This disposition facilitates a great deal the task of the psychiatrists in collecting all the necessary anamnestic data directly from the families of the patients, and enables the patients to live in their own environment, climatic and social. Those under observation remain there for a period of time not less than three months before they are discharged from the army and sent to state hospitals, of which there is one in each of the sixty-nine provinces of Italy. The psychiatric service outside the war zone is done in part by medical officers and in part by civilian psychiatrists, the chiefs of university clinics and asylums, who on account of their old age cannot be in active service. Towns where psychiatric sections are located are: Padua, Verona, Turin, Genoa, Parma, Alessandria, Reggio Emilia, Bologna, Ancona, Imola, Florence, Arezzo, Lucca, Siena, Perugia, Rome, Aquila, Bari, Catanzaro, Naples and Catania.

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[2] Autolesionist refers to those who practice malingering by self-mutilation.

A distribution center for all the psychopaths from the war zone has been recently located at Reggio Emilia. This center is composed of five sections having a total capacity of 1,600 beds, of which 150 are for officers. One section is for general cases requiring observation and medicolegal decision; another is for the observation and distribution of all cases of hysteria, neurasthenia and epilepsy; another is a convalescent home for neurotics who had preliminary treatment elsewhere within the war zone, insufficient, however, for the complete restoration of their mental and nervous functions. The American Red Cross contributed generously in supplying this recent formation with medical and surgical material. In a recent editorial of an Italian paper of Reggio Emilia, high praises are paid to the American Red Cross and its medical director, Dr. Joseph Collins of New York, who, being a neurologist himself, takes great interest in this matter.

A plan is under consideration to create special hospitals for the degenerates, perverted and amoral, whose number is increasing among soldiers, not as a product of the war, but because, in the rush for enlistment, the psychologic investigation of the recruits is usually neglected. These subjects are discovered later on and brought to the attention of the medical officers, who at present cannot dispose of them, although they know by experience how dangerous they are to the community.

(*b*) The Neurologic Centers: There were in Italy before the Austro-German drive of October, 1917, eight neurologic centers modeled on the French system. Since that time the center of Treviso has been suppressed, owing to its proximity to the Piave line, and three new centers were created on account of the increasing number of neurologic cases. Actually the neurologic centers are distributed as follows:

Milan, which is a distributing center for the organic cases coming from the battle front of the fifth and first armies. It is the largest one, composed of several hospitals for a total of more than 1,000 beds.

Pavia, 600 beds. This center is under the direction of the histologist Camillo Golgi, who went from the laboratory to give his valuable service for the solution of social problems arising from the war, and to devote himself to the present and future welfare of those wounded soldiers affected with organic neurologic lesions, who, without having lost limbs in the anatomic sense, have lost their function. These men, like the anatomically mutilated, have sacrificed their limbs. Physiologically they are crippled also, and deserve the same credit and help from their country as those who have had one or more of their limbs amputated; therefore, he called them the "functionally mutilated."

The other centers are: Genoa, 200 beds; Bologna, 300; Siena, 500; Ancona, 280; Rome, 310; Naples, 600; Bari, 150, and Catania, 250.

All these centers are equipped with modern apparatus for electromechanotherapy and diagnosis.

A notable innovation, which started in Milan and is proving most successful, is the institution of special occupational classes for the neurologic patients. These are by no means real schools for reeducation. Their scope is to furnish those patients who are able to do something during their period of treatment with a light occupation which, without tiring them, keeps them psychically active. For those patients who have either organic or functional disorders, the manual work, conveniently chosen and applied, is a wonderful therapeutic procedure, either from the point of view of the motor reeducation of the nervous and muscular system, or from the point of view of psychic reeducation of will. In many functional diseases of the nervous system, in which aboulia and psychic depression are prominent features, working is a splendid stimulus to rewaken and keep alive the individual energies and activities, which otherwise would be lost forever, and any later attempt for reeducation would prove either useless or a most difficult task.

WORK ACCOMPLISHED

It would be out of the field of this article to speak at length of the wonderful work done by the Italian psychiatrists and neurologists during this war; but I will give a few data.

There are about 20,000 patients, soldiers and officers, who are admitted in a year to the psychiatric and neurologic reserve hospitals. This number does not include those successfully treated in the neuropsychiatric sections and centers of the armies. The latter units have proved of great value in reducing the number of permanently unfit by preventing, with appropriate and timely treatment at the front, many of the sensorimotor psychoneurotics from becoming sensitive-motor neurotics, which would mean the definite loss of the patient to the army.

V. Bianchi, consulting neurologist and psychiatrist of the Second army, reports that of a hundred patients sent to his department, 50 per cent. were able to return to service after a short period of treatment or furlough. Of the remaining 50 per cent., one third had to be sent to psychopathic hospitals, but only one half of these were declared insane and ultimately sent to an asylum. The other two thirds were declared temporarily or permanently unfit for service, which means that they were either discharged from the army or sent to the centers outside the war zone for medicolegal decisions.

The problem of dealing with the neuropsychiatric invalids of war is one of capital importance. So far it has been given due attention in Italy. Aside from the help which the government has been given to this matter, a committee for war invalids has been organized in Rome with the purpose of assisting in every possible manner those soldiers who have cerebral, spinal and peripheral nerve lesions, and especially those who because of unusual and violent emotions reported in battle became functionally mutilated, namely, the invalids of the nerves, of the sight, of the hearing, of the speech and of the mind.

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CHRONIC SKIN AFFECTIONS IN THE SOLDIER

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My object in this paper is to point out the importance of looking for skin lesions, particularly those of a chronic nature, when examining men for the Army. From an examination of almost 8,000 men at the mustering office, and from a large experience in the dermatologic wards of the base hospital, I have been impressed by the potential and actual loss to the military service in accepting men who are suffering from chronic or recurrent dermatoses.

There are many types of skin affections which in ordinary civil life are of comparatively little significance. Many men go through life with these troubles without suffering any great inconvenience. When these men enter the Army, however, and are subjected to the physical and mental strain incident to Army life, they begin to have an aggravation of their trouble. They soon become incapacitated for work, and are sent to the infirmary or hospital for treatment. Many of these patients improve under rest and proper care, only to relapse soon after their return to duty. A sick or disabled man is a tax on the military organization. He cannot work; he requires medical attention; and to that extent he is a liability rather than an asset.

The accompanying table gives the various types of dermatoses as found among approximately 8,000 white men within a few days after their arrival at Camp Lee. Incidentally, this table also gives the number of men found with open syphilitic lesions, such as chancres, mucous patches and condylomas.

DERMATOSES AMONG EIGHT THOUSAND MEN

Acne keloid	1	Ichthyosis	8
Acne pustulosa	75	Lupus vulgaris	1
Acne rosacea	1	Parapsoriasis	1
Alopecia areata	8	Pediculosis corporis	1
Cysts, sebaceous (scalp)	3	Pediculosis pubis	3
Canities	2	Pityriasis versicolor	109
Dermatitis venenata	1	Psoriasis	40
Eczema, chronic	16	Purpura	2
Eczema, seborrheic	18	Scabies	20
Erythrasma	2	Syphilis (open lesions)	125
Folliculitis	11	Trichophytosis corporis	3
Erythema multiforme	4	Ulcer, varicose	2
Lipomas	4	Urticaria	5
Herpes zoster	2	Urticaria pigmentosa	1

Many of these diseases are of little significance from the standpoint of military service; but eczema gives considerable trouble, particularly if it affects the lower extremities. Among the men examined are many who give a history of chronic eczema, but who do not show any active manifestations. Active military life causes a return of their trouble, and they are then sent to the hospital for treatment.

REPORTS OF CASES

Case 1.—C., admitted to the hospital after being in service twenty-four days, gave a history of repeated attacks of papulovesicular eczema, which began six years before. On admission he presented an acute vesicular and weeping eczema of both feet, while on both hands there was a diffuse papulovesicular eruption. As the result of treatment, the inflammation gradually subsided after six weeks at the hospital. This man has now returned to duty, but will probably have a recurrence of his trouble.[1]

Case 2.—F. had had attacks of eczema for the past three years, particularly in the summer time. The present trouble began after being in service six months. A papular eruption appeared on the dorsum of both hands, and then spread to the arms and trunk. The patient was treated at the infirmary for two months, but the condition became worse. He was then admitted to the base hospital and discharged as improved after two weeks. Ten days later he was readmitted. On admission he presented a generalized erythematovesicular eczema that covered practically the entire body except the face and scalp. Some parts of the body, as the groins and axillary regions, showed considerable weeping. After more than two months of treatment there was only a moderate amelioration of the disease, and the patient had to be recommended for discharge from the service.

Case 3.—K., admitted to the base hospital after being in service about two months, gave a history of general pruritus and eczema of the right leg for the past ten years. The itching and inflammation would subside somewhat during the winter, but would become aggravated again with the approach of summer. The present attack began about three weeks previous to admission with a papular eruption on the hands and the body. On admission the patient presented a vesicular eczema of the face, neck and ears, while in the right popliteal space there was a thickened, red, scaly patch of chronic eczema. Both legs showed numerous excoriations as the result of scratching. The arms and trunk showed numerous erythematous and scaly patches. After prolonged treatment with very little benefit the patient was finally recommended for discharge from the Army.

Case 4.—Y., admitted to the hospital after two months' service, presented an interesting family history in that his mother, two brothers and one sister were suffering from a similar skin disease. The patient had had trouble with his hands and feet since he learned to walk. Large blebs would form on the palms and soles as the result of mechanical pressure. These lesions were present when the patient was mustered into service. After doing military duty for a few weeks, his condition became so painful that he was sent to the hospital for treatment. On admission the soles and palms showed a squamous condition as the result of the previous bleb formations. There was also a moderate hyperkeratosis of both plantar surfaces. While under observation at the hospital several new blebs have appeared on soles with very little inflammatory reaction. They heal without any atrophy or scar formations. The patient has now been in the hospital about six weeks without any marked benefit.

Case 5.—McD. had been in the service one month when admitted to the base hospital. Several members of the family had the same trouble. On admission he presented a marked hyperkeratosis of the soles of both feet and several deep fissures extending through the skin into the subcutaneous tissues. Walking was quite painful. Several weeks of treatment have thus far proved of little benefit. It is clearly evident that this man will never make a soldier, particularly as his condition has existed now for many years.

The histories of these and many other patients show that they are very difficult to cure permanently, and they will ultimately have to be sent home.

CONCLUSIONS

1. Chronic skin diseases, and particularly chronic eczema, are very resistant to treatment, and usually incapacitate men for military service.

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[1] The patient returned to the hospital after being out six days. His condition is just as bad as it was at his first admittance, and he will have to be discharged for physical disability.

2. Examining boards should inquire into the past history, and be on the lookout for evidence of chronic eczema particularly.

3. Men with chronic dermatoses should be placed under observation before they are mustered in. Should they prove incurable, they can then be rejected. This, in my opinion, would be much simpler than discharging them after they have been inducted into the service.

AN INTERESTING REACTION TO LOUSE BITES*

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Although the clothes louse is a known carrier of typhus and recurrent fevers and has recently been shown to be a carrier of trench fever, I am not aware of any published evidence that it may produce an illness due to a toxin or toxins introduced by its bite. Observations made while attempting to raise large numbers of lice for experimental purposes during the spring of 1918 appear to show that such an intoxication may result in persons bitten by large numbers of lice. The account given here is not presented as positive proof that such is the case, but rather to make available for other workers a record of our experiences.

Experiments were begun on the louse problem in the spring of 1917, with lice collected from the clothing of men in a municipal lodging house. They were kept in an electric incubator, heated to from 28 to 30 C. (82.4 to 86 F.). At first, attempts were made to feed them on rabbits, guinea-pigs, monkeys and pigs; but they refused to feed on either the rabbit or guinea-pig, and while they attempted to puncture the skin of a young pig, they were unsuccessful. The lice fed on the monkey but did not appear to thrive, which fact, together with the difficulty of so securing the monkey that it was unable to interfere with their feeding, caused a discontinuance of these methods. A laboratory assistant then undertook to feed them on his arm. Local irritation from the bites made it necessary to invite others to assist in feeding the lice. The work was continued in this manner until August, 1917, during which time no one person fed the lice more than two or three times a week, and at no time were there more than 400 lice. Miss Anna Wentz then took up the work as my assistant, and continued it until December. She cared for and fed all the lice, although they did not exceed several hundred at any one time. From April until December, when the work was temporarily discontinued, the lice received but one feeding a day, but when further experiments were started, March 12, it was determined to feed them twice a day, thus securing conditions more nearly normal.

During March, so many lice were destroyed in the experiments that there were at no time more than fifty lice to feed. By washing the arm with 95 per cent. alcohol immediately after the feeding and then treating it with a mixture of one-half glycerin and one-half ammonia, the local irritation was reduced to a minimum. During April, the number of lice on hand increased, and the first sign of an intoxication due to their bites was noted. Miss Wentz describes her condition as that of being generally tired and with a nearly continuous, dull, steady and at times, very severe headache at the base of the skull. Later chills and fever (the chill occurring before the fever) set in, with symptoms very similar to grip. The fever lasted for three days, being highest in the afternoon; but unfortunately no record of the temperature is available. At this time, a rash developed over the neck and shoulders, while a number of small blisters were noted on the arm, where the lice were fed. This illness occurred between April 15 and April 30, the exact date not being recorded, since at this time we had not associated the illness with the bites of the lice. About April 20, I took over the feeding of the lice with the result that Miss Wentz improved in health, until by May 6 all symptoms had disappeared.

Whereas Miss Wentz had started feeding with a small number of lice which gradually increased, I started feeding about 700 to 800 twice a day. Almost immediately a general tired feeling was noticed in the calf of the legs and along the shin bones, while on the soles of the feet and underneath the toes this tired feeling was so intense as often to prevent sleep until late in the night. An irritable and pessimistic state of mind developed. May 7, an illness resulted with symptoms very similar to grip, and a rash similar to German measles was present, particularly over the shoulders and abdomen. As German measles were prevalent in the community at that time, it was considered German measles; and after remaining in bed for several days, I returned to work and again took up the feeding of the lice. The general feeling, previously noted, was present with increasing intensity. By May 15, the number of lice in our reserve stock had increased to about 1,200, and, May 28, I was again forced to remain in bed. The family physician was called and diagnosed the case as possibly grip. The next day he was again called, since a distinct rash was present all over the body. The rash was considered quite typical of German measles, but other symptoms of measles were absent. The heart was normal, the pulse about 90, and the temperature varied from 100 to 102. A blood count revealed a normal number of leukocytes and red corpuscles. A severe headache was experienced, accompanied with pains in the legs, not only along the shins, but also in the calf of the leg and the soles of the feet, while intense pain was present in all the joints of the body. The appetite was lost for several days, and the tongue was heavily coated. Dr. A. D. Hirschfelder, who has been assisting on the louse problem, saw me at this time and considered that it was not German measles, nor was it grip, but might be trench fever. Glandular enlargement was absent and no enlargement of the spleen was noted. Recovery was complete except for a general weak condition by June 4.

I again took up the feeding of the lice, June 6, with the hope of producing the symptoms again and deciding if the illness was really caused by the lice and, if possible, whether it was trench fever. The lice numbered about 800 adults, which gradually died off while young lice hatched from the eggs, until by June 22 about 1,800 young lice were being fed. During the early period between June 6 and 15, no lassitude was noticed, but from about the 17th on, it gradually returned as the number of lice increased, until the 27th and 28th, when it was pronounced. On the 29th, I was feeling so miserable that it was a decided effort to get up in the morning and again feed the lice. The symptoms were the same as in the two previous illnesses. If the illness was due to the organism of trench fever, a day or two spent in the open with plenty of exercise would hardly prevent the attack, but if it was due to a toxin or toxins, it might be possible, by plenty of fresh air and exercise, to throw off the toxins and escape the attack; hence, the 29th and 30th were spent in the open, rowing and fishing. During the 29th, the symptoms were still quite pronounced, but gradually disappeared on the 30th, although a general tired feeling persisted for several days. Since that time, the lice have not been fed, and two weeks in July were spent on a vacation in the open. The result has been the total disappearance of the peculiar tired feeling in the legs and feet and a return to perfectly normal health.

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*From the Division of Entomology, Department of Agriculture, University of Minnesota.

* Published with the approval of the director as Paper 130 of the Journal Series of the Minnesota Agricultural Experiment Station.

CONCLUSION

The foregoing is suggestive that the clothes louse, if present in large numbers, may produce an illness, which appears to be an intoxication of the system with some toxin that they are capable of introducing at the time of feeding. It is also suggestive that some of the symptoms of trench fever encountered in certain cases may not be due to the organism of trench fever, but to certain toxins introduced by the lice.

University Farm.

AN APPARENTLY PRACTICAL METHOD FOR THE ISOLATION OF PFEIFFER'S BACILLUS FROM SPUTUM*

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CLEVELAND

During preliminary investigations in the present epidemic, the isolation of *B. influenzae* from sputum was found to be a difficult task when the usual routine procedure of plating on human blood agar was followed. The difficulty in isolating by this method is due to the fact that other organisms, such as pneumococci, staphylococci and *Micrococcus catarrhalis*, tend to obscure the colonies of influenza bacilli and overgrow them. Therefore it can be readily seen that in most instances the element of chance in isolating the influenza bacillus by blood agar plates alone is great and the whole procedure uncertain.

In 1903, Cantani[1] reported the interesting observation that bile did not destroy the virulence of influenza bacilli. Cultures of these organisms and bile simultaneously introduced into the peritoneum of guinea-pigs invariably killed the animals. It occurred to me to use bile or bile salts because of the dissolving action of bile on pneumococci and its inhibitive effect on other accessory organisms. Sodium taurocholate was used in a strength of 0.5 per cent.

Bronchial secretions were mixed with the taurocholate solution, and the mixture was allowed to stand for at least twenty minutes and longer. After exposure, streaks were made on human blood agar plates. The method proved satisfactory, and after twenty hours' incubation at 37 C. (98.6 F.) minute, colorless, transparent droplet-like colonies were easily detected and differentiated.

The organisms stain nicely with aqueous fuchsin and measure about 0.5 or 0.6 micron by 0.2 or 0.3 micron. They are gram-negative and form irregular clusters with no definite arrangement. They often give the appearance of *B. coli.*

Subcutaneous injection of washings from slants into mice proved fatal to the animals within six or seven hours. The bacilli were readily obtained from the heart blood of the animals.

Materials for the work were kindly furnished us by Dr. J. S. S. Gardner of the U. S. Marine Hospital, Cleveland.

PATHOLOGIC SIMILARITY BETWEEN PNEUMONIA OF BUBONIC PLAGUE AND OF PANDEMIC INFLUENZA

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Since the commencement of the present epidemic of influenza in New York City I have had occasion to investigate by necropsy at the Willard Parker and Bellevue hospitals twenty cases of death from pneumonia occurring in the course of this remarkable infection. The changes in the lungs are those of a variety of confluent lobular exudative and hemorrhagic pneumonia in which the naked eye and microscopic features bear such a resemblance to the lesions in the pneumonic variety of bubonic plague as to provide an interesting study in similarities. There are, however, several features which serve as differential safeguards in separating the two diseases on anatomic grounds. If these should be eliminated or projected into the background—as not infrequently they are—then, indeed, the sum of the reactions of the pulmonary tissues to the prevailing infection is so nearly equivalent to that of pneumonic plague as described and depicted by investigators in the Far East that, were it not for the aid of modern bacteriologic methods, the pathologist of this climate might be tempted to the conclusion that the world is facing a pandemic of pneumonic plague in which, contrary to rule, the mortality is relatively low, rather than a pandemic of influenza with unusually frequent pneumonic complications and a far higher mortality than that exacted by any previous eruption of the same disease. The captious critic might object that an otherwise harmonious comparison is violated by the projection of superficial buboes into the picture of pneumonic plague and their absence from that of influenza, to which it may be replied that the pneumonic variety of plague is seldom accompanied by those bubonic manifestations from which the disease takes its name and with which, erroneously, all of its several anatomic forms seem to be associated in the minds of most physicians resident in this latitude. As far, however, as participation of the deeper nodes is concerned, the extent and distribution of thoracic and abdominal adenopathies in both diseases bear out the analogy. Moreover, the similarity of the two diseases is enforced by the clinical features, which are remarkably alike in many respects, and by the pathology of certain tissues other than the lungs. However impressive these observations may be, it is comforting to recall that the bacteriology of the prevailing pandemic is vouched for by a number of exceedingly able investigators, and that *Bacillus pestis* has found no place in their results.

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* From the Department of Hygiene and Preventive Medicine of Western Reserve University.

[1] Cantani: Ztschr. f. Hyg. u. Infektionskr., 1903, **42**, 505.

In the greater number of all the cases of pneumonia associated with the prevailing epidemic, our experience at the Willard Parker and Bellevue hospitals is that the pleural cavities are free from excessive accumulation of fluid, only two exceptions having been found. In one of these the right pleural cavity was distended by cloudy, milklike fluid which had compressed the lung into an atelectatic mass scarcely larger than one's clenched fist, and the pleural was universally thickened. Obviously the empyema was one of long standing and had preceded the influenzal infection. In the second case, both pleural cavities were half filled with serofibrinous exudate, and the pleural membranes were extensively, although irregularly, obscured by collections of coarse, shaggy fibrin. In each of two other cases the pleura presented a localized, solitary patch of fibrinous exudate a few centimeters in diameter. In the remaining seventeen cases the pleurae were smooth, glistening and devoid of exudate. It is exceedingly important to note that, in this regard, the pathology of pneumonic plague is different from that of the existing pandemic influenza, Crowell, in twenty-five necropsies on subjects dead of plague in the Manchurian epidemic, having found extensive pleural exudates in every one.

The naked eye appearances of the lungs themselves, however, are highly suggestive, and, for descriptive purposes, may be thus grouped:

1. Cases with (*a*) extensive confluent lobular solidification of the lower lobes; (*b*) circumscribed or partially confluent consolidation of the lobules of the upper lobe, and (*c*) areas of acute vesicular emphysema. These cases without exception represented examples of rapidly fatal pneumonia.
2. More prolonged cases characterized by complete or almost complete consolidation of all or most of the lobes of both lungs, areas of acute vesicular emphysema occurring as an inconspicuous feature.
3. Those cases in which the pneumonic process is obviously subsiding.

THE ACUTE CASES

(*a*) The lower lobes of both lungs were always involved in company, never, in my experience, alone. The lower lobes were enlarged, heavy and extensively, often almost completely, consolidated. The involved areas presented a deep slate blue color mottled at intervals by slightly elevated pinkish or cream colored subpleural patches in which the inflammatory process had not progressed to its customary conclusion, or by areas of vesicular emphysema in which the dilated vesicles appeared as streaks or patches of minute, glistening, beadlike bodies. Petechial hemorrhages into the pleura or larger, splotchlike extravasations of blood were practically constant. As a rule, the extreme edges of the lung were spared by the solidifying process, the air vesicles undergoing, however, marked compensatory emphysematous changes. On section the substance of the lung cut readily. The cut surface presented a deep bluish or bluish black appearance, the substance was friable but less easily broken than that of the lung in croupous pneumonia, and the surface was of the smoothness of velvet, not a trace of fibrin being seen or felt. Scattered over the deep slate blue background were occasionally to be seen small, pinkish, granular-looking, firm patches in which, however, no suggestion of fibrinous granulations were apparent to the touch or microscopically. Pressure on the consolidated lobe released huge quantities of deeply blood stained serum in which there was a distinct milky tint due to the escape of leukocytic exudate from the vesicles. The cut ends of the smaller bronchi were sometimes to be distinguished by the escape of droplets of pus, oftener by frothy serum. The mucosa of the trachea and larger bronchi was greatly swollen, deep bluish red, and velvety, with an occasional grayish fleck of pseudomembrane lying on the surface. The peribronchial lymph nodes were markedly edematous and hyperemic, forming a mass around the root of the lung that sometimes attained remarkable proportions.

Microscopic examination of the deep bluish, firmly solidified portions of the lower lobe revealed the presence in the alveoli of huge numbers of red cells and polymorphonuclear leukocytes, either alone or in combination, and coagulated serum. Fibrin was absent. In many alveoli were quantities of large, rounded cells corresponding to desquamated vesicular epithelium. The interalveolar capillaries were intensely injected, as were those of the walls of the bronchi and bronchioles. The bronchioles were, for the greater part, filled by polymorphonuclear leukocytes, among which were clumps of desquamated epithelium.

(*b*) The upper lobes presented a somewhat different picture. The lowermost portions were divided into lobules of different sizes, some of them bluish and firm, others pinkish or reddish and less firm in consistency, while the uppermost parts and the extreme edges were markedly emphysematous and feathery. The microscopic changes in the solidified lobules varied, according to the degree of consolidation, from simple exudation of serum to distention of the vesicles by red cells or leukocytes or both. In other words, the pneumonic process in the upper lobes may be found in all stages of advancement, but the richly injected interalveolar capillaries and the frequent and abundant escape of red cells into the vesicles are apt to dominate the picture as a whole.

I shall not risk repetition in order to afford verification from an independent source of the similarity between the pulmonary changes in pneumonic plague and those of the prevailing pandemic of influenza as we have observed them at Bellevue Hospital. Suffice it to say that one has only to consult the admirable description of the lungs contained in Crowell's monograph[1] on plague, as he saw it in the Manchurian epidemic, to confirm the impression that the pulmonary changes in pandemic influenza are of the same essential variety, the constant pleural exudate in plague and the almost constant acute vesicular emphysema in influenza serving as the main points in the anatomic differentiation. Moreover, the colored illustrations that accompany Crowell's paper substantiate the resemblance to which I have ventured to call attention.

(*c*) The areas of acute vesicular emphysema so constantly to be found in association with the lobular pneumonia of pandemic influenza are of considerable clinical interest. For example, in two of our cases, rupture of distended air vesicles had taken place, probably near the apex of the lung, and the soft tissues in the supraclavicular spaces were crepitant with infiltrated air. In another case rupture had occurred, apparently in the vicinity of the root of the lung, since the soft tissues of the posterior aspect of the pericardium were permeated by myriads of emphysematous bullae varying in size from the head of a pin to that of a small marble. Gaseous particles extended thence into the soft tissues of the precordial area, downward toward the pericardial attachment to the central tendon of the diaphragm, forward into the retrosternal region, and thence through the upper aperture of the thorax into the neck and on to the lower portions of the face and downward into the subcutaneous tissues as far as the crest of the ilium on the left and the lower level of the costal slope on the right. In still another case, rupture had occurred directly into the left pleural cavity with the production of pneumothorax. In none of these cases was it possible for us to demonstrate at necropsy the actual point of rupture.

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[1] Crowell: Philippine Jour. Sc., B, 1812, 7, 203.

MORE PROLONGED CASES

In the Willard Parker and Bellevue Hospital necropsies we have several times observed almost complete consolidation of both lungs, particularly in individuals who had presented clinical indications of pneumonia for a relatively prolonged period. It was in two of these cases that the pleura presented localized patches of fibrinous exudate. In all of them the pulmonary substance was so extensively involved by the inflammatory process that the peripheral areas of vesicular emphysema were scarcely noticeable. In cases of this sort, also, the cut section of the lung sometimes showed pinhead sized or larger, rounded or irregularly outlined, grayish or cream colored bodies corresponding to confluent vesicular exudations of leukocytes, or there were areas in which, scattered over a considerable extent, the cut surface of the consolidated lung was marked by a network of grayish or grayish red lines surrounding deeply congested islands of consolidated tissue.

CASES IN WHICH PNEUMONIC PROCESS IS SUBSIDING

I have had an opportunity to study the lung in one case in which the pneumonic process was apparently subsiding. The patient was a man, about 30 years of age, who gave a history of having passed through a typical siege of influenzal pneumonia. He returned to work at an ill advised moment of convalescence and died suddenly. At necropsy the right side of the heart was greatly dilated and the muscle tissue was flabby. Both kidneys were large and congested, the tufts standing out as minute, reddish points. The spleen was enlarged and congested, weighing 275 gm. Both lungs were greatly increased in size. The upper lobes were emphysematous and feathery in consistency. The lower lobes were congested. In the lower lobe on the right side was a patch of consolidated tissue about the size of one's thumb, and similar but smaller areas were found to the extent of two or three lying in different parts of both lower lobes. These patches were deep bluish, firm, airless, and, on section, presented a perfectly smooth, velvety appearance, and quantities of semipurulent fluid could be squeezed from them. Scattered over the lower lobe, beneath the pleura, were several thumb-nail sized, pinkish patches, and it was observed that the pleura covering each of them was finely wrinkled. Evidently these patches represented areas in which the lung had undergone acute emphysematous alterations without complete loss of tone in the elastic fibrils, so that restitution was progressing. Microscopic examination of the solidified patches in the lungs revealed intense congestion of the interalveolar capillaries together with the presence in the air vesicles and smaller bronchi of dense collections of polymorphonuclear leukocytes. No red cells were apparent, and no fibrin.

Finally, I may be permitted to call attention to the occurrence of one instance in which the changes in the lungs of a soldier dead of influenza were identical with those originally described by Delafield as constituting an acute productive bronchopneumonia, and more recently studied by MacCallum[2] among the American troops in Texas. This variety of pneumonia is fairly common as a sequel of measles, and, according to MacCallum and Cole, is caused by a hemolytic streptococcus. It is marked by the presence in the lung of myriads of pin head sized, grayish white foci which are irregularly rounded or angulated and in the center of which a minute opening or depression may be discerned. In the case that I had an opportunity to study these spots were present literally in countless numbers scattered through both lungs, lying in a deep bluish red background and bearing a resemblance to miliary tubercles. On microscopic examination it was found that each whitish spot corresponded to a small bronchus whose lumen was partially or completely filled by polymorphonuclear leukocytes and clumps of desquamated epithelium. The connective tissue framework of the bronchus supported numbers of dilated and deeply injected capillary vessels between which were round cells. The alveoli in the vicinity or at a distance were filled either by polymorphonuclear leukocytes or by leukocytes and desquamated cells, some of the latter containing brownish yellow pigment granules. The interalveolar capillaries were universally injected. In short, the histologic changes were those of a very early stage of Delafield's, acute productive bronchopneumonia, the later stages of which, according to the original observations of the distinguished American pathologist,[3] are attended, among other things, by the growth of new connective tissue in the smaller and medium sized bronchi, in the interalveolar septums and thus by permanent changes of a productive nature.

THE CIRCULATORY SYSTEM

In the prevailing pandemic influenza, clinical indications of circulatory disturbances are numerous. For example, the nasopharynx is deeply congested, the skin is not uncommonly the seat of erythematous eruptions of various sorts, duskiness and cyanosis are common, the blood pressure is often alarmingly low, and the pulse is slow. At necropsy the signs of congestion are more intense and widespread than in any acute infective disease with which I am acquainted. The mucous membrane of the upper respiratory tract is swollen and deep red, the pulmonary capillaries, with scarcely a detectable exception, are crowded with red cells, and hemorrhages into the pleura and lung are common, the spleen is always deeply congested, the capillaries of the kidney from pelvis to capsule are filled to distention, the medulla of the suprarenals is frequently swollen and deep bluish red, the mucosa of the gastro-intestinal tract presents isolated or diffuse areas of injection, sometimes giving rise to hemorrhage by diapedesis, the lymph nodes are swollen and hyperemic to an unusual degree, the capillaries of the liver are injected to their fullest capacity, and the smaller vessels of the brain are likewise involved. In addition, the right side of the heart is dilated, especially the auricle, and the heart muscle is diffusely bluish and its capillaries are universally distended. Both the naked eye and microscopic appearances of the heart muscle fibers, however, are in the majority of cases indicative of a surprisingly excellent state of preservation. Cloudy swelling, in my experience, is exceptional.

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[2] Cole, Rufus, and MacCallum, W. G.: Pneumonia at a *Base Hospital*, The Journal A. M. A., April 20, 1918, p. 1146.

[3] Delafield: Lectures on the *Practice* of Medicine, Part 2, p. 223.

The anatomic and histologic changes in the circulatory apparatus are of importance as indicating the necessity for stimulation from the instant that the diagnosis of influenza is made. Clinically, there are excellent reasons for believing that these changes are present from the earliest moments of infection. Moreover, from the opportunity that I have had to observe these cases at necropsy and in the living patient, it appears to me to be probable that the prevailing pandemic influenza is attended by pneumonic lesions from the beginning. Thus it has been shown that patients in whom it is impossible to detect signs of consolidation by ordinary methods of diagnosis, if subjected to roentgen-ray examination, reveal defects in the lower lobes that are to be interpreted only as areas of consolidation, subsequent developments confirming this view. Moreover, the distribution of the pathologic changes in the lungs is such as to suggest that the infection is introduced by way of the respiratory tract and that, in many cases, the initial lobular consolidations are situated deep in the substance of the lung, the process later developing in such fashion as to include the periphery. In those cases in which death has occurred twenty-four or thirty-six hours after the development of detectable pneumonic signs, it is scarcely conceivable that the massive solidification of the lungs found at necropsy could have taken place with corresponding rapidity. The suggestion naturally follows that, if one is to err at all let it be on the safe side, and that every case of pandemic influenza should be regarded from the outset as pneumonic, and so treated.

THE KIDNEYS

Microscopic examination of the kidneys reveals diffuse congestion of the capillary network throughout the entire organ, together with cloudy swelling of the tubular epithelium, most marked in the convoluted tubules and not infrequently well marked in the epithelium of Bowman's capsule. In this way the lumina of the tubules become partly occluded by granular débris, and similar material is to be found in the interval between capsule and tuft.

THE BRAIN

In those cases attended by delirium, the meninges of the brain are richly infiltrated by serous fluid and the capillaries are injected. Microscopic examination of the brain substance shows marked hyperemia. In one of our cases the convolutions of the brain were flattened and the brain tissues were noticeably dry. In another case purulent meningitis of pneumococcal origin was present.

JAUNDICE

In seven of the twenty cases investigated postmortem at Bellevue and Willard Parker hospitals, slight jaundice was present. Inquiry into this feature has shown that the mucous membrane of the duodenum is congested and swollen and that the exit of bile through the papilla of Vater is impeded to an extent sufficient, in part at least, to account for its retention in the bile capillaries and liver cells. Moreover, microscopic examination reveals the liver cells in such an advanced state of cloudy swelling that the bile capillaries are obstructed, the bile accumulating in the cells as minute greenish particles, finally being diverted, no doubt, into the circulation. In addition, the bile itself is extremely viscid, the contents of the gallbladder consisting of material of gelatinous consistence.

THE SPLEEN

In seven of the twenty cases of fatal influenza the spleen was normal in size, in nine it was slightly increased, and in the remaining four the organ was distinctly enlarged, three times to the extent of 300 gm. or over. The organ is deep blue; there is, in fact, a strong resemblance between the color of the spleen and that of the consolidated lower lobes of the lungs as seen through the pleura. On section the substance of the spleen is deep blue, friable rather than grumous—in which respect the consistence differs from the spleen of sepsis as commonly observed—and the follicles are unusually numerous.

ABORTION

The observation of Ball[4] that pregnant women are apt to abort as a result of influenzal infection is confirmed by our experience at Bellevue Hospital. The subject is now being investigated and will be made the object of a subsequent report.

New and Nonofficial Remedies

THE FOLLOWING ADDITIONAL ARTICLES HAVE BEEN ACCEPTED AS CONFORMING TO THE RULES OF THE COUNCIL ON PHARMACY AND CHEMISTRY OF THE AMERICAN MEDICAL ASSOCIATION FOR ADMISSION TO NEW AND NONOFFICIAL REMEDIES. A COPY OF THE RULES ON WHICH THE COUNCIL BASES ITS ACTION WILL BE SENT ON APPLICATION. W. A. PUCKNER, SECRETARY.

LUTEIN-H. W. & D.—The fully developed corpora lutea of the hog freed from foreign material, dried and powdered. One part lutein-H. W. & D. represents approximately four parts of the fresh substance (see N. N. R., 1918, p. 237).

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[4] Ball, M. W.: Abortion as a Sequela of Influenza, THE JOURNAL A. M. A., Oct. 19, 1918, p. 1336.

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SATURDAY, NOVEMBER 2, 1918

WAR NEPHRITIS AND ALKALI THERAPY

Only those who cultivate an intelligent familiarity with the aims and methods of modern experimental medicine can appreciate to what degree it has become responsible not only for much needed improvements in the domain of diagnosis but also for changes in practical therapy. Illustrations abound on every side. A few years ago it was a conventional procedure to attempt to "flush out" the kidneys for all sorts of ills. Today it is fortunately realized by many clinicians—we wish that one could truthfully say by all—that in acute nephritis, for example, it is quite useless to give the patient large quantities of water to stimulate elimination, as this merely tends to irritate unnecessarily the kidneys, whose excreting powers are already crippled.

A further highly significant example of the wholesome outcome of research—animal experimentation, be it noted—may be cited in the work of MacNider[1] of the University of North Carolina on the renal functions. In the nephropathic condition induced by poisoning with uranium, he has shown not only that there is an association between the degree of kidney injury and the severity of the acid intoxication induced by this metal, but also that the intravenous use of an alkali in these animals will protect the kidney against the toxic effect of uranium and increase the efficiency of various diuretic substances. The stability of the acid-base equilibrium in any individual appears to be a factor of no small importance in relation to nephropathies. Earlier studies of MacNider[2] indicated that age may not be without significance in relation to the ease with which animals with kidney lesions develop acid intoxication. He has since demonstrated[1] that in contrast with normal subjects, naturally nephropathic animals have an unstable acid-base equilibrium. When the mechanism that controls this was subjected to the action of an agent, such as chloroform, which tends to induce an acid intoxication, the naturally nephropathic animals very rapidly developed such an intoxication, and became anuric. Normal animals, however, gave no evidence of acid intoxication, and in them the formation of urine was unaffected by the anesthetic. Furthermore, evidence has been presented to show that the naturally nephropathic animals, like those suffering from renal lesions experimentally induced, can be protected in varying degrees against toxic influences by the use of alkaline solutions. When failure to protect a damaged kidney occurs, it seems to be associated with rapid depletion of the alkali reserve of the blood and the development of acid intoxication. The degree of protection conferred by such alkalis as sodium carbonate is associated with the ability to maintain a normal acid-base equilibrium of the blood. Ordinary saline solutions have no such power.

MacNider's demonstrations have already caused alkali therapy to be given extensive trial in suitable human cases of war nephritis. By this is not meant an acute disease following a focus of infection, but rather that type of the renal disorder which shows an abrupt onset, with symptoms of dyspnea and edema. Unusual opportunity for such tests has been afforded among the troops in active service, where in contrast with the comparative rarity of acute nephritis in civil life large numbers of cases of this condition have been observed. Thus Keith and Thompson,[3] reporting from a base hospital in France to the British Medical Research Committee, assert that acidosis of moderate degree, measured by the alveolar carbon dioxid tension and the alkali reserve of the blood plasma, is generally present. One group of cases, designated as the resolving type, usually shows rapid improvement, disappearance of acidosis and reestablishment of good renal function through rest and simple dietotherapy. In the more severe nonresolving type of cases, however, alkali therapy seemed to be of distinct service in restoring both the normal acid-base relationship and improving the renal function.

Although acidosis was always accompanied by retention of substances normally excreted by the kidney, and spontaneous recovery from the acidosis followed the rapid elimination of these substances, the British investigators are of the opinion that the degree of acidosis encountered in war nephritis is secondary to impaired renal excretion. In this respect they agree with students of chronic nephropathics who have reached the conclusion that the acid intoxication developing in these conditions is a retention acidosis, and that the accumulation of nonvolatile acids is not responsible for the primary renal injury.[4] But when the acid substances accumulate, a further degeneration of epithelium may follow whereby the functional capacity of the kidney is arrested. It is this associated kidney injury which maintenance of acid-base equilibrium through administration of alkali seems to prevent.

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[1] MacNider, W. deB.: The Stability of the Acid-Base Equilibrium of the Blood in Naturally Nephropathic Animals and the Effect on Renal Function of Changes in This Equilibrium: I, A Study of the Acid-Base Equilibrium of the Blood in Naturally Nephropathic Animals and of the Functional Capacity of the Kidney in Such Animals Following an Anaesthetic; II, A Study of the Efficiency of an Alkali to Protect the Naturally Nephropathic Kidney Against the Toxic Effect of an Anesthetic, Jour. Exper. Med., 1918, **28**, 501, 517.

[2] MacNider, W. deB.: A Consideration of the Relative Toxicity of Uranium Nitrate for Animals of Different Ages, I, Jour. Exper. Med., 1917, **26**, 1; Concerning the Influence of the Age of an Organism in Maintaining its Acid-Base Equilibrium, Science, 1917, **46**, 643.

[3] Keith, W. M., and Thompson, W. W. D.: War Nephritis—A Clinical Functional and *Pathological* Study, Quart. Jour. Med., 1918, **11**, 229.

DIET AND MILK SECRETION

Not long after the demonstration that beriberi is a disease attributable to a deficiency of the dietary came the announcement that the nursing infants of mothers who were suffering from the malady might also exhibit the symptoms. Judging from the ordinary chemical analyses there was no reason to assume that the milk furnished by the victims of beriberi was deficient or unusual in its content of the ordinary nutrients. Fats, proteins, carbohydrate and mineral salts seemed to be present in the usual proportions. Soon it began to appear that milk is the carrier of something more than these familiar ingredients. Milk contains vitamins of more than one type. Evidently these may fail to be transmitted to the secretion under certain conditions of malnutrition in the lactating mother. Thus we are brought face to face with the unanticipated possibility that a product, milk, highly prized as an almost ideal food, may be of excellent quality as judged by the traditional standards of purity and value, and yet may lack something quite as essential as the calory-yielding ingredients.

To what may the failure to produce perfect milk be charged? Does the synthetic capacity of the mammary gland fail in its duty, or is the production of nutritively imperfect milk associated with the diet of the lactating individual? The latter assumption seems somewhat unlikely in view of the now current doctrine that it is "breed" rather than "feed" which determines the character of the milk of any species. The mammary gland is not merely a filter which separates indiscriminately the varying pabulum brought to it by the blood stream. It seems to yield a product of almost invariable character despite profound alterations in the food intake of its bearer. This has been found to be true of cattle; and it was long ago reported that during the siege of Paris in 1870 young and vigorous women maintained and in some cases even induced gains in their suckling infants while these mothers themselves were actually or nearly starving.[5]

Nevertheless, the synthetic powers of the mammary gland have evident limitations. Underfeeding and faulty diets are not without effect on the milk secretion; but it has remained for the more recent methods of biologic analysis—as it has been termed in contrast with ordinary chemical examination—to reveal the more subtle deficiencies that are the expression of the relation between improper food supply and milk production. The substantiated facts in this connection have recently been summarized by McCollum and Simmonds[6] of the newly established School of Hygiene and Public Health at Johns Hopkins University, to whom are due fundamental researches in this field. The evidence, they state, seems conclusive that there is no special synthetic power of the mammary tissue by virtue of which amino-acids that are not found in the food can be formed. It is true that the milk contains proteins of uniquely good nutritive quality so that young animals may grow far better on a small concentration of these than on a much larger intake of plant proteins, for example. What happens, however, is this: The maternal organism selects certain of the amino-acids from the digestion products of the food and presents them in the milk incorporated in proteins in such proportions as make a very efficient transformation into the tissue proteins of the young. To quote McCollum and Simmonds, the mother "makes from her large intake of protein of rather poor quality a smaller output of protein of exceptional biologic value in the milk." This involves no synthesis of amino-acids de novo—only a selective absorption and reconstitution of the amino-acids which circulate in the blood, into complexes, the milk proteins, which in turn act as food that is very efficiently converted into body proteins for growth.

Similarly, according to McCollum, Simmonds and Pitz,[7] the mammary gland picks up from the blood the as yet chemically unidentified vitamins and passes them into the milk. They cannot be produced synthetically, for when they are absent from the mother's diet the vitamins are not found in the milk. The demonstration of the production of an otherwise normal milk poor or lacking in the fat-soluble or water-soluble vitamin or both, and therefore not capable of inducing growth, is an item of great moment for the science of nutrition. It deserves to be emphasized prominently that "milk production may take place under dietary conditions such that the product is deficient in certain complexes necessary for growth." And it is a seemingly logical inference from this that deficiencies in the supply of certain inorganic nutrients to the mother may lead to consequent imperfections in the milk she secretes. The quality of milk needs to be evaluated from new standpoints.

Today we know that many of the items in the food supply of the less well to do may be poor in vitamins. Breads and other products prepared from highly milled cereals, refined sugar, vegetable fats, butter substitutes and meats belong to the staples in the rations of these people. Perhaps, therefore, there is no undue exaggeration in this contention of the Johns Hopkins biochemists:

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[4] Sellards, A. W.: The Essential Features of Acidosis and Their Occurrence in Chronic Renal Disease, Bull. Johns Hopkins Hosp., 1914, **25**, 141. Peabody, F. W.: Clinical Studies on the Respiration, II, The Acidosis of Chronic Nephritis, Arch. Int. Med., December, 1915, p. 955.

[5] Decaisne: Gaz. méd., 1871, p. 317.

[6] McCollum, E. V., and Simmonds, N.: The Nursing Mother as a Factor of Safety in the Nutrition of the Young, Am. Jour. Physiol., 1918, **46**, 275.

[7] McCollum, E. V.; Simmonds, N., and Pitz, W.: Jour. Biol. Chem., 1916, **27**, 33.

> There are tens of thousands of human mothers who are attempting to nurse infants on diets derived too largely from the seeds of plants and their milled products. Such diets produce inferior milks and may be the cause of grave disorders in the very young.

The remedy lies in the suitable extension of the dietary, in the use of green vegetables and fruits, and the inclusion of milk as far as economic conditions and financial resources allow.

INDICATIONS OF PHYSICAL OVEREXERTION

No one will dispute the general principle that exercise is essential to the well being of the human organism. Lack of use of a part or structure adapted to energetic functioning is likely to lead to poor nutrition and perhaps even to atrophy of the organ concerned. The phenomena of overexertion are not so generally recognized, although it would not be difficult for any physician to recall instances of damage thereby, particularly in relation to the circulatory apparatus. In other words, both overexertion and disuse of vital organs represent extremes of undesirable personal behavior. Perfect health demands a performance that shall steer a safe course between deficient exercise and undue effort.

The foregoing comments have an added import in connection with the problem of athletic sports. So long as these are in sole charge of untrained "trainers" there will be an element of danger in the win-at-all-costs attitude that is inculcated into the competitors in athletic games. In more recent years, protests against the possible sacrifice of health through undue exertion and break-neck strenuousness have begun to be heard. The "athletic heart" was the first symptom to awaken the exponents of unrestrained and indiscriminating effort in sports to the possibility of a real danger. Latterly the "athletic kidney" has commanded a little attention from the sober minded lovers of exercise in the form of sport; and it might not be amiss to assume the further possibility of a complex of disturbances involving the circulation as a whole and attributable to improper athletic effort. The kidney function has not as yet been taken into account as carefully as the heart activities, doubtless because it is somewhat less readily subjected to critical diagnostic analysis than are the cardiac performances.

The questions that perplex the student of the physiology of athletic exercise may for the most part be raised with equal propriety in connection with the work of the soldier. Military training has become a sort of nationalized athletic exercise in which the work to be done is not infrequently associated with tremendous exertion. Forced marches with heavy equipment, arduous toil at the guns on land and sea, and speeding-up moves at every turn of unexpected events in the uncertainties of war are experiences that mean a burden of physical effort to thousands of briefly trained young men. The problem of highest efficiency in war work as well as in peace play is bound up to some degree with the determination of the limit at which normal functioning ceases and the abnormal response manifests itself.

The military hygienist, therefore, not only is concerned with the conditions that determine the onset of fatigue, the enemy of all progress, but also asks how much the heart can endure and the kidneys tolerate without deterioration or impairment. There is, however, a category of persons who may well give him added concern. An army has its retinue of convalescents whose value for service depends on the ultimate degree of their recovery. A recent investigation by Feigl[1] at Hamburg shows that the usual clinical signs that the older methods of physical diagnosis depend on may not always be reliable indexes. He examined a considerable number of soldiers between the ages of 25 and 40 years who had regained a satisfactory state of nutrition and strength after prolonged stays in a military hospital. Most of them had experienced kidney disturbances as an involvement of the disease that invalided them, and had regained the status of being reported "practically well" when the tests were made. The task was a military march of 17 kilometers in three hours—not an unduly exacting trial for a soldier in good trim. The kidney functions were tested not only by an examination of the urine for protein and cellular structures but also by an analysis of the blood for evidences of retention of metabolites. The nonprotein nitrogen, urea, creatinin and uric acid were estimated. Incidentally it may be pointed out that the technic employed on these German soldiers was entirely that of made-in-America procedures. The results indicate that strenuous exercise which will not affect the functions of a well trained healthy person may nevertheless call forth evidences of imperfect restoration of capacity in apparently cured patients. Thus the newer and more subtle tests, such as the chemical micro-analysis of the blood affords, present information that warns—as The Journal has often warned before—of the danger of overstepping the physiologic limits of endurance in any physiologic activity.

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[1] Feigl, J.: Biochemische Untersuchungun über den Einfluss von Marschanstrengungen auf die Zusammensetzung des Blutes, Biochem. Ztschr., 1917, **84**, 332.

Fly Prevention in the B. E. F.—Tangle-foot wire instead of paper is used to catch flies in hospitals, convalescent camps and like places. Pieces of hay-baling wire, 2 feet long, have a hook bent on one end and by dipping or with a brush are coated with a hot mixture of 4 pints of castor oil and 9½ pounds of crushed resin. The oil is heated and the resin gradually stirred in. When these wires are hung up, the flies alight on them and stick fast. When the wires become covered they are burned off and recoated for use again.

Current Comment

IT IS A WISE PHYSICIAN WHO KNOWS HIS OWN DANGER

Last week the deaths of 81 physicians were recorded in The Journal, occupying three pages. This week the deaths of 174 physicians are recorded, occupying five pages. The total number of deaths recorded in these two issues is 255, and of these 154 are definitely known to have been due to influenza or pneumonia; undoubtedly in the majority of instances in which the cause is not given, it was influenza. These obituaries are records of sacrifice to duty. A layman may, if he desires, keep from exposing himself to any infection; but the physician must go when called without thought of consequences to himself. However, as one considers the list one wonders whether or not some of these deaths might have been prevented by adopting some of the simple precautionary methods that have been suggested, such as the wearing of the face mask. This thought arose when we received a letter from a physician who, in sending in the names of two physicians who had died, said: "Dr. A. visited at the Great Lakes Naval Training Station an old patient who had influenza. Two days after his return home, Dr. A. came down with the disease. Dr. B. was called to see Dr. A. and examined his throat, Dr. A. coughing in his face. Two days later Dr. B. had the typical manifestations of the disease." It is proverbial that physicians, like preachers, give advice which they themselves do not consistently follow. It is a wise doctor who knows his own danger.

DIGESTIVE ABSURDITIES AGAIN

In the Correspondence department of this issue is a letter from a company whose "aromatic digestive tablets" had failed to measure up to the standard of strength declared on the label. In its defense, the company offers the excuse that aromatic digestive tablets are of such a nature that they cannot "be expected to test up to labeled strength." This argument cannot be accepted unconditionally because the firm is engaged in a professional, as well as a commercial enterprise. Scientific investigation has demonstrated beyond any doubt the irrationality, one might even say absurdity of such combinations of digestive ferments as go to make up the various brands of aromatic digestive tablets, and all chemists and manufacturing pharmacists are familiar with these facts. The excuse for manufacturing them is that there is a call for them. That is to say, in spite of the demonstrable absurdity of the combinations of pepsin and pancreatin, etc., physicians continue to call for, and to waste their patients' money on, these ridiculous mixtures. Pharmaceutical concerns that wish to continue to sell aromatic digestive tablets, even though the scientific men on their staffs know that the preparations are absurd and that the ferments that are put into them will, in all probability, destroy each other before they can reach the patient, should be made to date such products. After all, though, it is a question whether the physician who ignorantly prescribes aromatic digestive tablets is not more morally culpable than the pharmaceutical house that supplies what such physicians demand.

NO SPECIFIC "CURE" FOR INFLUENZA

The present epidemic, as was to be expected, has given rise to the publication in the newspapers of all kinds of "sure cures." Their number is legion, and they vary in character from those with a semiscientific basis to others with no basis whatever. Some could be classed under the term ridiculous. Many persons recommend certain methods of treatment from purely altruistic motives, others for financial gain. Almost all of the proponents of alleged specific methods are bombastically enthusiastic. Hyperenthusiasm applied to moral or esthetic ideals is a praiseworthy emotion, but as related to medical science is usually a delusion and a snare. The research worker should view his results with a cold, dispassionate conservatism, before considering publication with resultant harm to himself and the public. Many of the alleged cures and remedies now being recommended probably will do more harm than good. The United States Public Health Service, having been besieged with inquiries regarding this and that method of treatment, has issued a special bulletin in which it is emphasized that there is no specific cure for influenza yet known and that the chief reliance must be placed on good hygiene, good nursing and symptomatic treatment.

BARLEY WILL CONSERVE WHEAT

"Barley," says M. Hindhede,[1] the Danish exponent of economy in nutrition, "is too valuable as a human food to be used in these hard times as fodder for pigs or in the production of beer." This conclusion was based on extended dietary experiments on men in which barley, margarin, sugar, milk and fruit represented the range of variety in the food intake. The cereal was used mostly in the form of coarse groats, yet it was utilized almost as well as comparable coarse whole wheat bread; and doubtless a better milled or better cooked product would have shown even superior digestibility. The availability of the very coarse cereal used was by no means equal to that of the finest wheat bread or similar refined products, but its wholesomeness seemed to be beyond question. An exclusive diet of cereals is never ideal, whatever the source of the grain used. But many persons have depended so largely on wheat in the past that they fail to recognize the equivalent merits of its substitutes. We have already spoken a good word for barley in support of the well founded contentions of the U. S. Food Administration. Barley is extremely hardy, and is grown as far north as the Arctic Ocean in Russia and as far south as the Nile and the equator in eastern Africa. Its drought-resisting qualities make it particularly valuable as a crop in somewhat arid regions. Barley is believed to have been one of the first cereals used by man and is today probably the best of the substitutes for mixing with wheat in bread-making.

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[1] Hindhede, M.: Ernährungsversuche mit Gerstenwassergrütze. Skandin. Arch. f. Physiol., 1918, 35, 294.

Medical Mobilization and the War

Government Purchase for Laboratory School at New Haven

The government has recently purchased the property of the Elm City Hospital Corporation, New Haven, and is using it for work in connection with the Yale Army Laboratory School and the medical side of the Chemical Warfare Service. All candidates for positions in the various base, field, and mobile laboratories overseas will be sent to New Haven for intensive training. About 400 men are enrolled and are under the command of Lieut.-Col. Charles F. Craig, M. C., U. S. Army. Work has been commenced on a temporary building on the New Haven Hospital grounds for the Army Laboratory School.

New Publication of Camp Wheeler Hospital

The United States Base Hospital at Camp Wheeler, Ga., has just begun the publication of a semimonthly, the *Camouflage,* devoted to the interests of the Medical Department. It is a twelve-page publication excellently printed, and with an artistic cover. The name, the *Camouflage,* seems particularly apt since the first issue contains several items taken from, and which were original in, the "Tonics and Sedatives" department of The Journal without credit. They are signed by Sarg. this and Sarg. that.

Honors Awarded

The Distinguished Service Cross has been awarded to Capt. George E. McGinnis, One Hundred and Tenth Ambulance Company, One Hundred and Third Sanitary Train, of Clarendon, Pa., who on "The night of August 9, with complete disregard of his personal safety made a reconnaissance under fire and located a line of evacuation for ambulances from Fismette, and on the morning of August 10, under shell fire personally repaired the bridge between Fismes and Fismette thereby making possible the evacuation of twenty-eight wounded men," also to Asst. Surg. Ogden D. King, U. S. Navy, Albemarle, N. C., attached to U. S. Marine Corps, "In action near the Bois de Belleau, June 9 and 10, in two successive days the regimental aid station in which Surgeon King was working was struck by heavy shells, and in each case demolished. Ten men were killed and a number of wounded badly hurt by falling timbers and stones. Under these harassing conditions this officer continued without cessation his treatment of wounded, assisting in their evacuation, and setting an inspiring example of devotion and courage to the officers serving under him."

Rehabilitation of Soldiers and Sailors

The federal board for vocational education has begun the work of placing disabled soldiers and sailors for reeducation, according to the *Vocational Summary* for October. The rehabilitation division of the board has opened offices, for the purpose of reeducating and placing disabled men, in seven different districts. District 1 comprises the New England States, except Connecticut; District 2, New York, New Jersey and Connecticut; District 3, Pennsylvania and Delaware; District 4, West Virginia, Virginia, Maryland and the District of Columbia; District 5, Florida, Georgia, North Carolina, South Carolina and Tennessee; District 6, Louisiana, Mississippi and Alabama, and District 7, Indiana, Ohio and Kentucky. Other districts will be created and offices opened as soon as the proper personnel can be obtained. In dealing with the disabled man the board expects to treat him throughout as a civilian needing advice and assistance, to approve his choice of occupation unless, after careful investigation, sound opinion shows it to be in the end not advisable to train him to meet the needs of the occupation he has elected, to urge him to make the most of his opportunity to overcome his handicap by taking thoroughgoing instructions, to help him to secure desirable permanent employment, and to keep in close touch with him after he goes to work.

Officers Needed in Sanitary Corps, U. S. Army

A communication from the office of the Surgeon-General announces that for the purpose of meeting the requirements of a considerably enlarged program of service, both in the Army camps in this country and with the American forces overseas, the Sanitary Engineering Section of the Sanitary Corps is in need of a number of officers of the following types: sanitary engineers of broad training and experience in water supply and its purification, sewerage and sewage disposal, and other engineering activities related to public health; engineers with practical experience in drainage and mosquito control operations; epidemiologists with good training in preventive medicine and qualified to institute and administer practical measures for the prevention or control of contagious disease; municipal health officers or sanitary inspectors with sound training in the fundamentals of sanitation and with a record of successful experience in handling men and in the sanitation of closely occupied areas, such as cities and industrial communities; water chemists and bacteriologists skilled in field and laboratory examination of water and with practical experience in water and sewage problems. The present and prospective work of this section will require the services of both commissioned and noncommissioned officers, and of a relatively small number of privates. Applications for information and for service should be made to the Surgeon-General, Washington, D. C.

VOLUNTEER PHYSICIANS FOR UNITED STATES PUBLIC HEALTH SERVICE

The Journal has published several announcements asking for volunteers for permanent work as acting assistant surgeons in the Public Health Service. In addition, the Public Health Service is in urgent need of physicians for temporary duty in connection with the influenza epidemic. This work is being organized by states in connection with the state boards of health. Physicians who wish to make themselves available for temporary emergency work at a salary of $200 per month and $4 per diem allowance for subsistence should communicate with the Surgeon-General, U. S. P. H. S., indicating their desire to serve, or communicate directly with the Public Health Service officer in their own state. A list of such public health officers follows:

Alabama—P. A. Surg. Robert Olesen, City Hall, Montgomery.
Arizona—Field Director O. Harry Brown, Supt. Public Health, Phoenix.
Arkansas—Asst. Epidem. J. C. Geiger, City Hall, Little Rock.
California—Surg. W. C. Billings, 76 New Montgomery St., San Francisco.
Colorado—T. D. E. E. Kennedy, Sec. State Board of Health, Denver.
Connecticut—Hdqrs. at Boston, Mass., State House, R. 167-C, Boston.
Delaware—A. A. Surg. J. W. Richards, c/o St. Bd. Health, Wilmington.
District of Columbia—Asst. Surg. E. S. Mustard, Webster School, 10th and H Sts., N.W.
Florida—Asst. Surg. O. H. Cox, State Bd. of Health, Jacksonville.
Georgia—Asst. Epidem. C. C. Applewhite, 78 Marietta St., Atlanta.
Idaho—Field Director E. T. Bower, State Health Officer, Boise.
Illinois—Senior Surg. J. C. Cobb, 4141 Clarendon Ave., Chicago.
Indiana—A. A. Surg. W. F. King, State Board of Health, Indianapolis.
Iowa—Asst. Surg. W. C. Witte, Box 912 (Telegrams U.S.P.H.S.) Des Moines.
Kansas—Collab. Epidem. S. J. Crumbine, State Health Officer, Topeka.
Kentucky—Surg. L. D. Fricks, 519 Custom House, Louisville.
Eastern Kentucky—Surg. John McMullen, P. O. B. Lexington.
Louisiana—Surg. C. M. Corput, Marine Hospital, New Orleans.
Maine—P. Asst. Surg Paul Preble, c/o State Health Officer, Augusta.
Maryland—A. A. Surg. C. Hampson Jones, State Dept. Health, 16 W. Saratoga St., Baltimore.
Massachusetts—State House, R. 167-C, Boston (Headquarters).
Michigan—Field Director R. M. Olin, Sec., State Bd. of Health, Lansing.
Minnesota—Collab. Epidem. R. M. Bracken, Sec. State Bd. H., St. Paul.
Mississippi—Collab. Epidem. W. S. Leathers, State Bd. H., Jackson.
Montana—Collab. Epidem. W. F. Cogswell, Sec. State Bd. H., Helena.
Nebraska—Field Director W. F. Wild, Com. of Health, Lincoln.
New Hampshire—State House, R. 167-C, Boston, Mass. (Hdqrs.)
New Jersey—P. A. Surg. W. L. Treadway, State Bd. Health, Trenton.
New Mexico—Surg. J. W. Kerr, Castenada Hotel, Las Vegas.
New York—Field Director Hermann M. Biggs, Com. of Health, Albany.
North Carolina—Prof. C. W. Stiles, State Board of Health, Raleigh.
North Dakota—Field Director C. J. McGurren, Sec. Bd. H., Devils Lake.
Ohio—A. A. Surg. E. W. Scott, U.S.P.H.S., State Bd. Health, Columbus.
Oregon—A. A. Surg. A. C. Seely, State Board Health, Portland.
Pennsylvania—P. A. Surg. W. F. Draper, State Dept. H., Harrisburg.
Rhode Island—(Hdqrs. Boston, Mass.) State House, R. 167-C, Boston.
South Carolina—P. A. Surg. C. V. Akin, State Bd. Health, Columbia.
South Dakota—Field Director Park S. Jenkins, Supt. Health, Wanbay.
Tennessee—P. A. Surg. R. C. Derivaux, State Bd. of Health, Nashville.
Texas—Surg. C. H. Gardner, State Board of Health, Austin.
Utah—A. A. Surg. T. B. Beatty, State Bd. Health, Salt Lake City.
Vermont—(Hdqrs. at Boston, Mass. State House, Room 167-C):
Virginia—Sc. Asst. W. L. Wood, State Board of Health, Richmond, Va.

Washington—A. A. Surg. T. D. Tuttle, c/o State Board of Health, or 930 Henry Bldg., Seattle.
West Virginia—A. A. Surg. Alston Maxwell, 16 Masonic Bldg., Charleston.
Wisconsin—Field Director C. A. Harper, State Health Officer, Madison.
Wyoming—Field Director C. Y. Beard, Sec. State Bd. H., Cheyenne.
Pennsylvania—Surg. Edward Francis, Armory, Chester, Pa.

The Twenty-Sixth Annual Meeting of the Association of Military Surgeons

The twenty-sixth annual meeting of the Association of Military Surgeons was held at Camp Greenleaf, Chickamauga Park, Ga., under command of Col. W. N. Bispham, October 14 to 16. The attendance (about 400) consisted of representative medical officers from the U. S. Army, U. S. Navy, and the Public Health Service. Among the papers presented were those of Lieut.-Col. George E. deSchweinitz, showing how eyes are saved and thereby limiting the number of cases of blindness. Conditions of the ear, nose and throat, whereby the hearing and sense of smell and taste were saved in many instances, were shown by Col. H. P. Mosher of Boston, and also by Col. W. J. S. Lyster.

The Surgeon-General's Office of the Navy was represented by Capt. George A. Lung, commanding officer, U. S. Naval Hospital, Brooklyn, who is in charge of the largest naval hospital in the world. To a large extent many of the members of the Marine Corps from the Chateau Thierry and Soissons sector are under his care. Captain Lung, as president of the organization, read a most instructive and interesting paper reviewing the history of the organization and holding forth some of the problems that would have to be presented to the medical officer at the end of the war.

Capt. F. S. Pleadwell, M. C., U. S. Navy, who was medical aide to the commandant of the Norfolk Naval District and for a year naval observer to the allied forces in Europe, presented a most interesting paper on hygiene and sanitation in which he described the improved conditions installed throughout Europe in an endeavor to make "our boys" have healthy surroundings. He described how their quarters were made habitable, and how diseases which were responsible for a large number of deaths during the Spanish-American War were entirely eliminated. Captain Pleadwell was elected third vice president.

Capt. F. T. McCullough, fleet surgeon of the Atlantic fleet, read a most instructive and intesting paper relative to the handling of our sick and wounded boys in their being transported from the other side to America.

Capt. J. A. Murphy of the Surgeon-General's Office described the importance of the work that is being carried on at Camp Greenleaf under Colonel Bispham, commanding, and its relation to the Navy and the work of the Navy while our troops are transported to Europe.

A most unusual and interesting demonstration was shown by Commander R. S. Bainbridge, M. C., U. S. Navy, in which he showed some moving pictures which have not as yet been shown in America until the present meeting, and demonstrating the advances made in restoring the cosmetic appearance of men who have extensive injuries to the nose, mouth, chin, and about the eyes. Many persons who would otherwise look hideous have had artificial face masks made out of copper netting treated with silver, and molded in such a position as to cover defects in the nose and other parts. Special details are completed by comparing the artificial face with a photograph before the injured went to war. Commander Bainbridge also gave a most interesting talk on the spirit of the Medical Corps, of the soldiers, and of the civilian population behind the battle lines. He described the not infrequent reinvigoration of elderly men, who are taking the places of many of the younger men who were killed in large numbers during the early part of the war.

One of the papers on surgical subjects was presented by Major F. H. Albee, M. C., which gave the importance of using the bone particles in the restoration of lost bone. The subject was beautifully illustrated with moving pictures.

On the afternoon of October 15 the entire command of Greenleaf was reviewed by Colonel Birmingham, president-elect of the association. On the same evening the delegates and visiting members witnessed a minstrel show which was staged for their entertainment. This entertainment was furnished by the enlisted personnel of Camp Greenleaf. A great many members remained until the close of the session, Wednesday evening, when they were entertained with an athletic exhibition, consisting of wrestling, boxing, etc., the music for which was furnished by the 120 piece Camp Greenleaf Medical Department Band.

At the business meeting several important amendments to the constitution were adopted, one of which admits to associate membership acting assistant surgeons of the Army, Navy and Public Health Service, and another provides for a sinking fund committee to consist of the president, treasurer, and three members selected from former presidents of the association. The following officers were elected: president, Col. Henry P. Birmingham, M. C., U. S. Army; vice presidents, Col. Joseph A. Hall, M. C., U. S. Army, Cincinnati (representing the National Guard); Asst. Surg.-Gen. John K. Kerr, U. S. P. H. S., and Capt. Frank L. Pleadwell, Medical Director, U. S. Navy; secretary-treasurer, Col. William J. L. Lyster, M. C., U. S. Army, and members of the sinking fund committee, Surg.-Gen. Rupert Blue, U. S. P. H. S.; Admiral William C. Braisted, Surgeon-General, U. S. Navy, and Col. Van R. Hoff, M. C., U. S. Army (retired). The selection of the next place of meeting was left to the executive council with power to act.

American Expeditionary Forces' Weekly Bulletin

The following paragraphs are taken from the *Weekly Bulletin of Disease*, dated September 23, issued for circulation among American medical officers in France:

PNEUMONIA

Septic pneumonia, due commonly to the *Streptococcus hemolyticus*, has appeared in virulent form in a dozen or more different and widely separated points in France. There has been a high mortality (from 20 to 40 per cent.), deaths occurring in many instances within twenty-four and forty-eight hours of onset of symptoms. The conflict between infection and resistance, once the symptoms are well declared, is apparently but little modified by any treatment provided.

Exhausted, driven, anxious men are easy prey to infection. The condition of the men when exposed to infection is of far greater importance than the care he gets after he is sick in bed. A man is entitled to at least the devoted care given to a horse. The man's resistance is largely at the mercy of his officers, and to them we must look for the greatest measure of prevention.

Here is what energetic and resourceful medical men are doing about the pneumonia situation in the A. E. F., through improvements in sanitation of environment and control of personal habits:

(From Headquarters, 32d Division, Office of Division Surgeon)

For the purpose of prevention and treatment, pneumonia will hereafter be regarded as a contagious disease by the medical personnel of this division.

If a case occurs during an inactive period or while in billets, the following will govern:

1. Send patient to hospital designated.
2. Report the diagnosis to this office by telephone or courier, giving name, number, company, organization, number of contacts and where they may be found.
3. The contacts will be segregated. The term "contacts" will be understood to mean all those who have been in close and more or less permanent relationship with the sick man and those who sleep in nearby and adjoining beds, those who work with him in kitchens, offices, and the like.
4. The surgeon will immediately make an inspection of quarters, reporting number of occupants, cubic feet of air, light, etc. He will arrange for a thorough cleaning and disinfection of the billet and institute efficient preventive measures, such as antiseptic treatment of the nose and throat of all contacts.
5. On arrival in hospital, the patient will be isolated, so far as practicable by screening or otherwise. Attendants will wear gauze masks over the nose and mouth and will be given the same treatment as other contacts.
6. One or more wards, as necessary, will be designated as pneumonia wards. No other cases will be admitted.
7. No visitors will be allowed, except when absolutely necessary.
8. Utensils, linen, etc., will be handled as with other contagious diseases.
9. Pneumonia, as with other respiratory diseases, is spread by careless expectoration and coughing (droplet infection). Effective regulations must be enforced for the prevention of infection by this means. Educate the men as to the dangers of careless expectoration.
10. Battalion surgeons will make frequent inspections of billets and inspections and examinations of men in order personally to know at all times the conditions under which

the men are living and their physical condition. The battalion surgeon who does not know the physical condition of the men at all times is *not* giving efficient service. The daily sick call does not give sufficient opportunity to know the true condition.

Pneumonia is a disease, the result of human contact. It is spread by overcrowding in billets, by exposure to cold and wet, by exhaustion, etc. See that the men have a reasonable air space in billets and that the billets are ventilated. Sleeping with heads placed alternately prevents men from coughing in each other's faces.

The effective strength of this division depends to a large extent on the earnest efforts of all medical officers to improve sanitary conditions. Where such efforts do not bring results, submit report to this office stating action taken, dates, and the names of responsible officers, in order that the matter may, if necessary, be brought to the attention of the commanding general.

(Headquarters, Hospital Center, Rimaucourt)

The commanding officer of each organization will report by memo to this office within two weeks after arrival in camp that each officer, nurse and employee of his organization can correctly recite the answers to the questions as given below:

Q.—What is the greatest danger to which you are exposed in France?

Ans.—Death from such diseases as meningitis, pneumonia, tonsillitis, influenza, measles and diphtheria.

Q.—How can I avoid this danger?

Ans.—1. By preventing comrades from coughing or breathing in my face.

2. By preventing comrades from spitting in and around buildings.

3. By preventing comrades from shutting up buildings so that the air may get close.

Q.—What else shall I do to avoid endangering my comrades?

Ans.—1. I will turn my head when I cough.

2. I will hold a handkerchief in my hand over my mouth when I cough.

3. I will keep my handkerchief and my hands clean at all times.

4. I will fix up a can in which men in my barracks can spit into a disinfecting liquid.

(Headquarters, Base Section No. 2, S. O. S.)

The following directions are given for the guidance of medical officers in the treatment of the disease (epidemic influenza and pneumonia) and to prevent its spread. The situation is serious and demands the utmost effort on the part of medical officers and thorough cooperation on the part of line officers.

(*a*) Early recognition of the first cases with their prompt and complete isolation.

(*b*) Every patient should be strictly confined to bed until symptoms have completely abated. Isolation should be maintained throughout convalescence.

(*c*) The bowels should be evacuated at the beginning of an attack, and liquid or light diet be given.

(*d*) In case of any spread of the disease in an organization, the organization should be quarantined; all pass privileges should be withdrawn, no troops should be sent elsewhere from an affected organization, and any new troops that are introduced into it while the disease prevails should be isolated so far as possible from the rest of the organization.

(*e*) It should be remembered that the disease is highly contagious, that it is probably most readily transmitted by the nasal, pharyngeal and bronchial discharges, especially in coughing, sneezing and spitting, but that it may also probably be transmitted by blankets, clothing, mess kits and other articles used by patients.

(*f*) Public gatherings, such as movie shows, concerts and dances, should be prohibited during an epidemic.

(*g*) The utmost efforts should be made to prevent overcrowding of the men in quarters during an epidemic. Where feasible, it is well to put men outdoors to sleep if necessary to prevent overcrowding.

(*h*) Medical officers are directed to report promptly to the chief surgeon of this base any indications of an incipient epidemic among the troops for which they are responsible.

(*i*) Reports from the French Service de Santé inform us that the disease prevails among the civil population in many localities, notably at Bordeaux, Arcachon, Tarbes, and Bayonne. Commanders of organizations in which the disease does not exist are warned against granting leave to any place where the disease is prevalent on account of the danger of such men introducing the disease into their organization on their return.

Evacuation or Transfer of Pneumonias.—Medical officers are warned against exposing pneumonia patients or patients with severe pulmonary disease with fever to the fatigue of transportation unless under urgent necessity for space for battle casualties. Complete rest in pulmonary disease is absolutely indispensable.

SPECIAL WARNING

Influenza is as contagious as measles and as dangerous. It is a dangerous disease by reason of the fatal complicating pneumonia. Isolate all cases of influenza, and if severe, hospitalize immediately. Examine daily all contacts for the earliest signs of the disease (pharyngitis, fever and conjunctivitis), and isolate promptly. Watch for the earliest symptoms of pneumonia. These are slight cyanosis, increased respiration, and a continuation of fever beyond the third or fourth day. The early signs of involvement of the lungs in bronchopneumonia may be slight and shown only by hyperresonance and scattered râles. It is imperative that all bronchopneumonia suspects should be removed from influenza wards and isolated separately. Beware of too early evacuation of influenza patients.

COMMISSIONS OFFERED AND ORDERS TO DUTY ON ACCEPTANCE

Alabama

To Army Medical School, Lieut. J. J. HALL, Oak Hill.

To Camp Joseph E. Johnston, Fla., Capt. O. J. BROOKS, Huntsville; Lieut. W. E. WARREN, Fort Payne.

To Fort Oglethorpe for instruction, Capt. R. A. SMITH, Brewton; Lieuts. E. H. WALKER, Birmingham; N. S. JOHNSON, Clanton; J. H. DODSON, Mobile.

Arkansas

To Fort Oglethorpe for instruction, Capt. O. MILLER, Fayetteville.

To Fort Riley for instruction, Lieuts. R. O. SMITH, Reyno; L. GARDNER, Russellville; E. D. BUTLER, Wilmar.

California

To Camp Cody, N. M., base hospital, for instruction, Capt. J. A. McNAUGHTON, Lieut. M. A. FRANK, Los Angeles.

To Camp Fremont, Calif., base hospital, Capt. W. O. MONTGOMERY, San Francisco; Lieut. J. W. DEWITT, Antioch. Base hospital, for instruction, Capt. E. A. KUSEL, Oroville.

To Camp Kearney, Calif., Capt. F. E. BROWN, Los Angeles; Lieut. E. E. DOTSON, Escondido. Base hospital, for instruction, Capt. J. S. GREEN, Oakland.

To Camp Lewis, Wash., Capts. M. M. ARMSTRONG, W. A. DUNTON, Los Angeles; Lieut. H. J. FORBES, Pasadena.

To Denver, Colo., Capt. J. B. FISH, San Leandro; Lieut. R. J. CARY, Livermore.

To Fort Oglethorpe for instruction, Capt. M. W. KAPP, San Jose; Lieuts. W. W. DUTCHER, L. E. WILSON, Los Angeles; E. C. BLACK, San Diego; E. F. HOLBROOK, San Jose.

To Fort Riley for instruction, Capts. R. N. SMITH, Los Angeles; R. O. SHELTON, San Diego; Lieuts. C. F. CRITTENDEN, Alameda; W. C. PRUETT, Oakland; F. R. MUGLER, San Francisco; R. L. HOGG, Saratoga; H. G. ROSENBERGER, Whittier.

To report to the commanding general, Hawaiian Department, Lieut. J. H. HURST, Santa Barbara; Western Department, Capts. A. A. MILLIKEN, Fort Jones; C. H. WALTER, San Jose.

To Sacramento, Calif., Mather Field, Capt. P. de OBARRIO, San Francisco.

To San Francisco, Calif., Letterman General Hospital, Lieut. L. DOZIER, Stockton.

Colorado

To Camp Lewis, Wash., base hospital, Capt. D. G. MONAGHAN, Denver.

To Fort Oglethorpe for instruction, Lieut. L. M. MAITLAND, Drake.

To Fort Riley for instruction, Capts. S. H. BELL, Montrose; W. LUCAS, Pueblo; Lieuts. R. L. DOWNING, Bayfield; G. F. LEE, Denver; C. H. TIDD, Telluride.

To New Haven, Conn., Yale Army Laboratory School, for instruction, Lieut. J. A. MOREHOUSE, Idaho Springs.

Connecticut

To Camp Lewis, Wash., Lieut. W. E. COYLE, Waterbury.

To Camp Wheeler, Ga., base hospital, Lieut. C. K. STILLMAN, Mystic.

To Fort Oglethorpe for instruction, Capt. T. F. BEVANS, Waterbury; Lieuts. E. J. S. SCOFIELD, Danbury; F. E. FOLEY, H. J. GIAMARINO, H. W. GRODZINSKY, New Haven.

To Hoboken, N. J., Lieut. D. D. REIDY, Winsted.

To Plattsburg, N. Y., Lieut. E. T. GIBSON, Middletown.

Florida

To Camp Beauregard, La., Lieut. W. F. McGRIFF, Niceville.

To Camp Joseph E. Johnston, Fla., Lieuts. H. BYRD, Princeton; J. HALTON, Sarasota.

Georgia

To Fort Oglethorpe for instruction, Capt. J. P. PROCTOR, Athens; Lieuts. P. M. HOWARD, College Park; A. J. WHELCHEL, Cordele; D. J. BARTON, Hartwell; J. GERDINE, Jersey; C. S. FLOYD, Loganville; B. BASHINSKI, Macon; E. P. WHITE, Tignall.

Hawaii

To report to the commanding officer, Hawaiian Department, Capt. H. H. BLODGETT, Honolulu; Lieut. R. C. LICHTENFELS, Hana.

Illinois

To Camp Custer, Mich., Lieut. F. PHILLIPS, Arthur. Base hospital, for instruction, Lieut. H. R. KENNY, Chicago.

To Camp Grant, Ill., base hospital, Capt. L. B. PHELPS, Oak Park. *To examine the command* for nervous and mental diseases, Lieut. L. G. WRIGHT, Chicago.

To Camp Greene, S. C., base hospital, for instruction, Lieut. R. A. BUCKNER, Gilman.

To Camp Leach, D. C., Lieut. A. M. FROMM, Ramsey.

To Camp McClellan, Ala., Capt. W. H. GAMBILL, Centralia.

To Camp Pike, Ark., Lieut. I. F. FREEMMEL, Jacksonville.

To Camp Sevier, S. C., base hospital, for instruction, Lieut. E. ANDREWS, Chicago.

To Fort Oglethorpe for instruction, Capts. G. OSBORNE, M. M. PORTIS, Chicago; E. W. POTTHOFF, Oak Park; D. P. WIENS, Peoria; Lieuts. J. R BUCHBINDER, E. C. SKEMBARE, E. W. WHITE, Chicago; J. J. CONDON, Danville; W. R. GARDINER, Herrin.

To Fort Riley, Lieut. T. J. LAMPING, Chicago. For instruction, Capts. G. F. BRACKEN, C. L. CONROY, F. A. DAVIS, R. J. DUNN, H. K. GIBSON, J. H. REEVES, Chicago; C. E. HILL, East St. Louis; F. G. HALL, Galesburg; W. A. BALCKE, Pekin; Lieuts. C. A. JOHNSON, Barry; L. SMITH, Chapin; C. M. BERNTSEN, N. C. BULKLEY, D. D. BURNS, H. T. [illegible] DONOVAN, B. E. ELLIOTT, A. O. ELLISON, [illegible] FERGUSON, G. F. GATES, F. F. HOFFM[illegible] S. B. KOSITCHEK, J. H. KRAMER, S. OCHS, M. PENCHINA, Chicago; F. T. FITCH, Dunlap; G. O. HULICK, East St. Louis; W. T. COLLINS, I. J. GRANT, Freeport; D. S. BOLES, Herrin; H. T. KING, Joliet; T. S. EBAN, Mapleton; S. E. PARR, Ottawa; A. W. SLAUGHTER, Paris; W. M. AVERY, Pawpaw; W. E. FOSTER, Richmond; H. R. ROGERS, Rockford; R. E. VALENTINE, Tallula; R. G. EMPSON, Valmeyer.

To New Haven, Conn., Lieuts. M. D. REINHART, Chicago; W. J. WALLINGSFORD, Maywood. Yale Army Laboratory School, for instruction, Lieut. W. J. SCHOLES, Chicago.

To San Francisco, Calif., Letterman General Hospital, Capt. C. F. LARSON, Chicago.

Indiana

To Camp Shelby, Miss., base hospital, for instruction, Capt. H. G. FLEMING, Anderson.

To Fort Oglethorpe for instruction, Capt. W. B. PAGE, Goshen; Lieuts. F. G. GREEN, Bloomingdale; J. S. LEFFEL, Connersville; J. A. GARRETTSON, Indianapolis; E. J. EMMERT, Lawrenceburg; C. A. PAVY, Terre Haute.

To Fort Riley for instruction, Capts. C. W. YARRINGTON, *Gary;* G. A. PETERSDORF, Indianapolis; M. L. ARTHUR, Patoka; Lieuts. G. W. PIRTLE, Carlisle; B. G. DUPRE, Fort Wayne; A. M. KAN, Gary; E. F. STEINKAMP, Huntingburg; C. S. WISEMAN, Lakeville; H. G. LIND, Nineveh; J. H. GREEN, North Vernon; T. J. COLLINGS, Rockville; C. E. SAVERY, South Bend; W. A. BAGBY, Utica.

To New Haven, Conn., Capt. W. A. McBRIDE, Indianapolis.

Iowa

To Ann Arbor, Mich., State Psychopathic Hospital, Capt. E. E. HARRIS, Grinnell; for intensive training, Lieut. E. P. BENEDICT, Battle Creek.

To Camp Custer, Mich., Lieut. F. M. KEEFE, Clinton.

To Camp Dodge, Iowa, Capt. H. A. LINDSAY, Independence; Lieut. W. M. SHIRLEY, *Carroll.*

To Fort Oglethorpe for instruction, Lieut. L. F. TALLEY, Diagonal.

To Fort Riley for instruction, Capts. F. R. KING, Farmersburg; E. HENELY, Nora Springs; F. P. LEEHEY, *Oelwein;* E. R. *SHANNON,* Waterloo; J. M. SMITTLE, Waucoma; Lieuts. E. L. LAMPE, Bellevue; H. P. BENJAMIN, Council Bluffs; J. DUNN, Davenport; W. F. BRINKMAN, Des Moines; I. J. PASCOE, Harvey; G. MARIS, Hull; E. E. KIMMEL, Iowa City.

Kansas

To Camp Sherman, Ohio, base hospital, and for instruction, Capt. W. F. BOWEN, Topeka.

To Fort Oglethorpe for instruction, Capt. L. F. BARNEY, Kansas City.

To Fort Riley, Lieut. E. R. GHENEY, Gypsum. For instruction, Capt. R. J. HARLIN, Erie; Lieuts. R. B. McKINNEY, Augusta; W. R. SCOTT, Baxter Springs; W. ROBERTSON Caldwell; F. W. WHITE, Emporia; T. J. [illegible] TALBOT, Hoyt; F. D. LOSE, Madison; [illegible] R. E. TEALL, Palso; D. W. MELTON, [illegible], Salina; M. MEHRLE, Walnut; W. R. FISHER, Wichita.

Kentucky

To Camp Zachary Taylor, Ky., Lieut. A. J. DAVIDSON, Louisville. Base hospital, Major D. C. MORTON, *Louisville;* Capts. J. H. THORPE, Owensboro; G. F. DOYLE, Winchester; Lieut. W. L. SHANON, Newport.

To Fort Oglethorpe for instruction, Capts. J. R. MEEK, Covington; S. J. ROLLOW, Edgoten; J. C. LEWIS, Lexington; R. E. GRIFFIN, Owensboro; Lieuts. L. E. NICHOLS, Dawson Springs; W. A. ASHBECK, Gage; E. L. GATES, Herndon; E. E. EDWARDS, Irvine; W. E. DALE, Louisville; J. C. TUCKER, McDaniels.

Louisiana

To Camp Joseph E. Johnston, Fla., Lieut. W. K. EVANS, Lake Providence.

To Fort Oglethorpe for instruction, Lieuts. A. J. BABIN, G. J. HAUER, C. P. HOLDERITH, A. D. MOULEDOUS, New Orleans; S. B. WOLFF, Opelousas.

Maine

To Colonia, N. J., Capt. L. E. WILLARD, Saco.

To Fort Oglethorpe for instruction, Capt. D. A. McNALLY, Biddeford; Lieut. J. O. PIPER, Selon.

Maryland

To Fort Oglethorpe for instruction, Lieuts. R. C. HUME, Adamstown; H. B. AHTEY, C. E. CLARK, W. S. NIBLETT, M. E. SHAMER, Baltimore; W. L. BURNS, Cumberland; W. T. HAMMOND, Easton.

To Newport News, Va., Lieut. H. S. KUHLMAN, Jefferson.

Massachusetts

To Camp Devens, Mass., Lieuts. H. F. CURTIS, East Longmeadow; G. H. HICKS, Fall River. Base hospital, for instruction, Capt. A. P. GEORGE, Haverhill; Lieut. G. E. REYNOLDS, Pittsfield.

To Camp Gordon, Ga., base hospital, Lieut. A. A. CUSHING, Brookline.

To Camp Greene, N. C., to examine the command for nervous and mental diseases, Lieut. F. P. MOORE, East Norfolk.

To Camp Sevier, S. C., base hospital, Capt. B. H. CASWELL, Winter Hill.

To Camp Wheeler, Ga., base hospital, Capt. C. A. TETRAULT, Southbridge.

To Fort Oglethorpe for instruction, Capt. A. H. PROUTY, North Brookfield; Lieuts. W. R. STEVENS, Abington; J. F. LAWLOR, Beverly; E. J. FITZGIBBON, Boston; H. B. PITCHER, Fitchburg; D. W. HEFFERMAN, Holliston; J. A. LEVEK, Lawrence; C. A. ROWE, Milton; J. M. SALLES, New Bedford; R. E. FOSS, E. M. VARNEY, Peabody; P. J. FINNEGAN, Salem; R. L. EMERY, Winchester.

To Hoboken, N. J., Lieuts. J. F. FALLON, Brookline; L. W. PEASE,, Weymouth.

To report to the comanding general, Eastern Department, Lieut. F. A. MURPHY, Taunton.

Michigan

To Camp Custer, Mich., base hospital, for instruction, Capt. A. E. LEITCH, Saginaw.

To Fort Oglethorpe for instruction, Capt. W. J. ANDERSON, Iron Mountain; Lieuts. D. M. CLARKE, J. R. RUPP, Detroit; W. A. GRANT, Lyons.

To Fort Riley for instruction, Lieuts. A. T. PAULL, Flint; M. M. SEARS, Kalamazoo; I. V. YALE, Sault Ste. Marie.

To Mineola, N. Y., Hazelhurst Field, for instruction, Lieut. R. D. BROWN, Detroit.

To New Haven, Conn., Lieut. E. N. NESBITT, Detroit.

Minnesota

To Camp Custer, Mich., Lieuts. J. C. KOCH, Blackduck; F. G. KOHLER, Stewart. Base hospital, for instruction, Capt. F. H. ALDRICH, *Belview.*

To Camp Dodge, Iowa, to examine the command for nervous and mental diseases, Capt. C. C. BLAKELY, St. Peter.

To Camp Grant, Ill., base hospital, for instruction, Capt. N. H. SCHELDRUP, Minneapolis.

To Camp Jackson, S. C., base hospital, Capt. G. B. EUSTERMAN, Rochester.

To Camp Meade, Md., Lieut. P. J. EISENBERG, St. Paul.

To Camp Pike, Ark., base hospital, for instruction, Capt. W. N. KENDRICK, Spring Valley.

To Camp Wheeler, Ga., base hospital, Major G. D. HEAD, Minneapolis.

To Fort Riley for instruction, Lieuts. R. E. BECHTEL, Eveleth; G. A. D. EISENGRAEBER, Granite Falls; I. J. MURPHY, M. SHERPER, St. Paul.

To New York, Neurological Institute, for instruction, Lieut. J. A. EVERT, Brainerd.

Mississippi

To Camp Beauregard, La., base hospital, Capt. C. S. MIDDLETON, Clinton.

To Camp Joseph E. Johnston, Fla., Lieut. F. E. BARR, Starkville.

To Fort Oglethorpe for instruction, Capt. J. T. HOSEY, Enterprise; Lieuts. H. E. GRIFFIN, Coffeeville; H. H. MECKLIN, Holly Bluff; W. C. POOL, Issaquena; B. R. CLARK, Lorman.

Missouri

To Camp Dodge, Iowa, base hospital, Capt. A. LEVY, St. Louis.

To Camp Lee, Va., Lieut. H. T. ROBINSON, Cumberland.

To Camp Pike, Ark., Lieut. H. J. BLOUNT, Potosi. Base hospital, Lieut. C. W. TOOKER, St. Louis.

To Camp Shelby, Miss., Capt. O. S. WILFLEY, Webb City.

To Fort Oglethorpe for instruction, Capts. A. B. LIBBY, Gardiner; T. T. O'DELL, Marionville; E. S. PORTER, Milan; B. E. MANKOPF, New Haven; G. D. *WRIGHT,* St. *Joseph;* Lieut. L. NOE, Novelty.

To Fort Riley for instruction, Capt. E. D. STANDLY, Brookfield; Lieuts. A. L. CAMBRE, Atlanta; R. C. ROBERTSON, Aurora; W. L. WOOD, Bolckow; H. B. NORTON, *Center;* F. S. WEBER, Farmington; A. D. FERGUSON, Hunnewell; L. R. WEIR, Lathrop; C. L. DODSON, Moberly; O. H. LOWDER, Moselle; T. FREEMAN, Piedmont; L. S. SHUMATE, Reeds *Spring;* R. E. WILEY, Sikeston; R. GZELL, F. W. KIRSCH, W. F. MARTEN, C. P. MARTIN, P. G. MOSKOP, R. A. PHELAN, S. VEZEAU, St. Louis; G. C. BACK, Zalma.

To New Haven, Conn., Yale Army Laboratory School, for instruction, Lieut. J. F. BROOKE, Kansas City.

To New York, Neurological Institute, for instruction, Capt. R. D. IRLAND, Kansas City.

Montana

To Fort Oglethorpe for instruction, Lieut. L. W. SMITH, Butte.

To Fort Riley for instruction, Lieuts. F. J. WILLIAMS, Butte; B. E. LORD, Great Falls; C. W. WILDER, Lewiston; J. C. DOCTOR, Philipsburg.

Nebraska

To Camp Dodge, Iowa, base hospital, for instruction, Capt. A. R. DesJARDIEN, Lincoln.

To Fort Riley for instruction, Capt. E. E. BOYD, Central City; Lieuts. P. R. SCHLUMBERGER, Oakdale; G. BUOL, Ravenna; W. E. LAMB, Sprague.

To New Haven, Conn., Yale Army Laboratory *School,* for instruction, Lieut. A. L. BARR, Omaha.

New Hampshire

To Fort Oglethorpe for instruction, Lieuts. W. C. ROWE, Concord; C. M. WIGGIN, Conway.

New Jersey

To Camp Abraham Eustis, Va., Capt. W. BUERMANN, Newark.

To Camp Crane, Pa., Lieuts. F. S. PARK, Atlantic City; F. C. WITTE, Riverton.

To Camp Lee, Va., Lieut. A. C. *BENEDICT,* South Orange.

To Camp Wadsworth, S. C., base hospital, for instruction, Capt. H. F. COOK, Newark.

To Camp Zachary Taylor, Ky., base hospital, Capt. E. B. SUTPHEN, Morristown.

To Fort Oglethorpe for instruction, Lieuts. E. E. LUPIN, E. THUM, Bayonne; W. P. THORNE, Butler; H. H. STRAUB, East Orange; J. A. DERIVAUX, P. H. FEDERMAN, C. L. O'NEILL, Newark; C. G. BUCKMASTER, West New York.

To Hoboken, N. J., Lieut. C. A. PLUME, Succassunna.

To New Haven, Conn., Lieuts. A. A. MUTTER, Arlington; A. E. JAFFIN, Jersey City.

To Newport News, Va., Capt. F. R. SANDT, Paterson; Lieut. L. S. SICA, Trenton.

New Mexico

To Camp Cody, N. M., base hospital, Capt. F. C. BAKES, Albuquerque. For instruction, Lieut. C. F. MONTGOMERY, Roswell.

To Fort Oglethorpe for instruction, Capt. H. J. MUELLER, East Las Vegas.

To report to the commanding general, Southern Department, Lieut. W. R. WASHBURN, Ingleville.

New York

To Camp Custer, Mich., base hospital, for instruction, Capts. E. M. ARMSTRONG, S. ERDMAN, New York.

To Camp Devens, Mass., base hospital, Capt. W. YOUNG, Gouverneur. Base hospital, for instruction, Capt. H. W. VICKERS, Little Falls.

To Camp Dix, N. J., base hospital, Lieut. J. C. O'GORMAN, Buffalo.

To Camp Gordon, Ga., base hospital, Lieut. P. J. DONAHOE, New Hartford.

To Camp Jackson, S. C., Capt. A. E. BARTON, New York. Base hospital, Capt. E. A. STAPLETON, Albany.

To Camp Joseph E. Johnston, Fla., Lieut. D. HERTZBERG, New York.

To Camp Lee, Va., base hospital, for instruction, Capt. R. G. LOOP, Elmira.

To Camp Meade, Md., Lieut. R. O. GREGORY, Elmira. Base hospital, Capt. D. S. BELLINGER, Buffalo.

To Camp Sevier, S. C., base hospital, Lieut. R. A. COOKE, New York.

To Camp Shelby, Miss., base hospital, Capt. R. S. TAYLOR, Buffalo.

To Camp Wadsworth, S. C., base hospital, Lieut. J. J. SHAY, Brooklyn.

To Fort Oglethorpe for instruction, Capts. G. S. KING, Bay Shore; J. S. LEWIS, U. B. STEIN, H. R. TRICK, F. ZINGSHEIM, Buffalo; R. A. BARNEY, Hornell; W. W. BOSTWICK, F. KNOWLES, New York; F. R. PICKETT, Olcott; T. H. CANNING, Port Henry; Lieuts. A. D. HAVERSTOCK, Brooklyn; L. F. ANDERSON, J. S. GIANFRANCESCHI, J. I. KEARNEY, W. S. LYNCH, G. P. MICHEL, F. SEILHEIMER, F. TERRASSE, E. L. VILLIAUME, Buffalo; F. W. GOODRICH, Catskill; E. C. WATERBURY, Croton Lake; R. S. McBIRNEY, Glen Cave; R. C. MOONEY, Gloversville; J. H. ACHESON, Hancock; N. MILLS, Mount Vernon; B. LEVINSON, Newburgh; E. J. DOLAN, H. C. DORSEY, M. V. IOVINE, A. B. LEVY, J. M. O'CONNOR, J. SCHECHTER, T. V. STACK, New York; C. A. WISCH, Niagara Falls; R. P. REAGAN, North Tonawanda; L. A. NEWMAN, Port Washington; C. J. GIANFRANCESCHI, Rochester; K. S. CLARK, Schenectady; F. H. STANBRO, Springville; D. H. BLUESTONE, C. W. DEMONG, Syracuse; C. S. BERGMAN, West Hanerstraw.

To Hoboken, N. J., Lieuts. N. B. WHITCOMB, Vovinia Center; M. ROSENBERG, Brooklyn; F. E. MONTGOMERY, New York; F. F. RONEY, North Rose.

To New Haven, Conn., Capts. E. G. WHIPPLE, Rochester; P. McPARTLON, Schenectady. Yale Army Laboratory School, for instruction, Capt. C. R. ORR, Lieuts. L. J. STRONG, Buffalo; V. R. EHLE, *Gloversville*.

To New York, Cornell Medical College, Capt. E. C. KOENIG, Buffalo. *Neurological Institute*, for instruction, Capt. K. A. ENLIND, New York; for intensive training, Lieut. H. M. BOWLBY, New York.

To Plattsburgh, N. Y., Capts. J. V. HABERMAN, New York; C. J. PATTERSON, Troy; Lieuts. C. G. TAYLOR, New York; W. J. DOUGHERTY, Yonkers.

To Washington, D. C., St. Elizabeth's Hospital, Capt. A. W. KLEIN, New York.

North Carolina

To Fort Oglethorpe for instruction, Capt. C. S. MAXWELL, Beaufort; Lieuts. A. L. HYATT, Kinston; I. E. SHAFER, Salisbury.

To New Haven, Conn., Lieut. J. W. WILCOX, *Laurel Hill*.

North Dakota

To Fort Riley for instruction, Lieut. A. R. SORENSON, Rugby.

Ohio

To Ann Arbor, Mich., State Psychopathic Hospital, Lieut. L. A. LURIE, *Cincinnati*.

To Camp Abraham Eustis, Va., Capt. C. J. BEEKLEY, Cincinnati.

To Camp Dodge, Iowa, base hospital, Lieut. J. V. GREENEBAUM, Cincinnati.

To Camp Grant, Ill., base hospital, Capt. D. G. SANOR, Columbus.

To Camp Jackson, S. C., base hospital, for instruction, Lieut. R. B. CHAMBERLIN, Twinsburg.

To Camp Leach, D. C., Lieuts. F. BEEKEL, Cleveland; H. L. WILKINSON, Hamilton.

To Camp MacArthur, Texas, base hospital, Lieut. W. H. HODGES, Columbus.

To Fort Oglethorpe for instruction, Capts. A. B. LIPPERT, S. C. NIEMAN, Cincinnati; O. T. THOMAS, Cleveland; E. HERBST, Columbus; J. W. HARBARGER, Jackson; H. H. POSTLE, Newark; J. B. McCORD, Oberlin; A. W. WHEELER, Toledo; K. F. LITTLE, Westwood; Lieuts. A. F. McQUEEN, Amherst; H. E. MYERS, Columbus; C. R. BLOSSER, Dunkirk; E. W. BREYFOGLE, Frankfort; H. J. AUSTIN, Geneva; R. C. ALLEN, Glendale; C. J. HAARLAMMERT, Loveland; J. A. McCOWAN, Marietta; E. W. WOODRUFF, Martins Ferry; C. W. HOOPES, Marysville; W. S. RHODES, Nelsonville; D. F. RUSSELL, Paulding; C. T. ATKINSON, Portsmouth; S. R. HUTCHINGS, Springfield; A. H. SYLER, Sugar Creek; O. J. LETHERMAN, Thronville; G. W. DUNLAP, H. G. PAMMENT, Toledo; J. B. FRANCIS, Troy; R. C. HUNTER, Wapakoneta; F. C. METZGER, Waverly; C. J. CHAMBERLIN, West Chester; G. C. AURAND, Weston; L. F. LONG, Zanesville.

To New York, Cornell Medical College, for instruction, Lieut. J. T. MURPHY, Toledo.

Oklahoma

To Fort Oglethorpe for instruction, Capt. W. T. ROWLEY, Miami.

To Fort Riley for instruction, Lieuts. P. B. MYERS, Apache; R. F. BROWN, Headrick; J. T. WHARTON, Picher.

Oregon

To Camp Lewis, Wash., Capt. A. E. TAMIESIE, Pendleton; Lieuts. A. L. RICHARDSON, La Grande; J. A. APPLEWHITE, L. O. ROBERTS, Portland.

To Fort Oglethorpe for instruction, Lieut. G. MOUNT, Oregon City.

To Fort Riley for instruction, Capt. R. S. FISHER, Portland; Lieuts. C. E. WHEELER, Klamath Falls; J. I. McKELWAY, Pendleton; J. F. DITTO, Rainier.

Pennsylvania

To Camp A. A. Humphreys, Va., Lieut. J. BARDY, Philadelphia.

To Camp Crane, Pa., Lieuts. C. O [illegible] PORCH, Fairfield; C. C. PARKS, [illegible]; L. L. [illegible], Lititz; D. H. PARKE, New Kensington; [illegible] D. B. COOLEY, Pottstown; H. M. LEIN[illegible], [illegible] SEYLER, Reading; G. H. KIRKPATRICK, Wilkinsburg.

To Camp Custer, Mich., Lieut. A. B. PAINTER, Mill Hill.

To Camp Gordon, Ga., base hospital, Lieut. A. J. DEVLIN, Philadelphia.

To Camp Greene, N. C., base hospital, Capt. J. T. ULLOM, Philadelphia.

To Camp Jackson, S. C., Lieut. C. I. TRULLINGER, Harrisburg. Base hospital, Capt. F. T. BILLINGS, Pittsburgh. Base *hospital*, for instruction, Lieut. E. V. THOMPSON, Franklin.

To Camp Joseph E. Johnston, Fla., Lieut. D. M. SIDLICK, Philadelphia.

To Camp Lee, Va., Lieut. W. J. L. McCULLOUGH, Washington.

To Camp Sheridan, Ala., base hospital, for instruction, Capt. J. W. DIXON, Wilkinsburg.

To Camp Sherman, Ohio, Lieut. S. L. KOCH, Pittsburgh.

To Camp Zachary Taylor, Ky., base hospital, Lieut. J. E. GROSS, Pittsburgh.

To Fort Oglethorpe for instruction, Capts. J. D. MATZ, Allentown; M. C. O'BRIEN, Philadelphia; F. B. NORTON, Pittsburgh; C. L. LEYDIC, Tarentum; Lieuts. H. P. MEYERS, Confluence; M. T. GILLETTE, Corry; W. F. WEITZEL, Indiana; E. K. CONRAD, Johnstown; S. A. BRUNNER, Krumsville; M. H. YODER, Lititz; C. B. KIRK, Mill Hall; S. P. SIMPSON, New Brighton; B. A. McDERMOTT, A. G. SAMPSON, C. W. WANG, Philadelphia; E. R. BLOUGH, R. C. M. STEWART, Pittsburgh; J. F. BUZZARS, Portage; L. F. MAUGER, Pottstown; R. M. LYTLE, Saltsburg; T. DUFF, Slippery Rock.

To New Haven, Conn., Yale Army Laboratory School, for instruction, Lieut. F. W. ST. CLAIR, Indiana.

To Newport News, Va., Lieut. F. G. SCHAEFFER, Allentown.

Porto Rico

To Camp Las Casas, P. R., Lieut. H. C. LEONHARDT, Bayamon.

Rhode Island

To Camp Gordon, Ga., base hospital, Lieut. J. G. WALSH, Providence.

To Camp Jackson, S. C., base hospital, Major F. T. FULTON, Providence.

To Fort Oglethorpe for instruction, Capt. H. B. POTTER, Wakefield; Lieuts. J. B. O'NEILL, Pawtucket; E. T. LEARNED, Providence.

South Carolina

To Camp Greene, N. C., base hospital, for instruction, Lieut. W. E. FULMER, Columbia.

To Fort Oglethorpe for instruction, Capt. W. S. ZIMMERMAN, Spartanburg; Lieut. J. M. HOBSON, Townville.

To report to the Governor of South Carolina, Capt. K. M. LYNCH, Charleston.

South Dakota

To Austin, Texas, Lieut. L. F. BEALL, Irene.

To Camp Custer, Mich., Capt. W. J. BENNER, Willow Lake.

To Fort Oglethorpe for instruction, Lieut. R. J. MORRISEY, Fort Pierre.

To Fort Riley, Lieut. F. N. CLIFE, Milbank. For instruction, Capt. H. A. MURNAN, Gregory.

Tennessee

To Camp Pike, Ark., base hospital, for instruction, Lieut. W. A. HORAN, Nashville.

To Fort Oglethorpe for instruction, Capt. W. G. RUBLE, Morristown; Lieuts. G. B. BROWN, Atoka; J. L. L. BIBB, *Chattanooga*; E. B. PASCHALL, Cottage Grove; G. G. KEENER, Kingsport; W. A. GRIMMETT, Mason; H. G. HILL, J. C. MOBLEY, Memphis; A. T. CLOPTON, *Milan*; C. F. THOMASON, Nashville.

Texas

To Camp John Wise, Texas, Capt. W. O. STEPHENSON, Dallas.

To Camp Logan, Texas, base hospital, Lieut. F. J. HALL, Dallas. Base hospital, for instruction, Lieut. H. R. LEVY, Dallas.

To Camp Travis, Texas, Capt. J. S. TURNER, Dallas. Base hospital, for instruction, Capt. C. L. POWER, Temple.

To Fort Oglethorpe for instruction, Capts. J. W. BOURLAND, Dallas; J. C. DYSART, El Paso; Lieut. J. E. ROGERS, Rocksprings.

To Fort Riley for instruction, Lieuts. W. S. WILKISON, Christoval; W. E. HAMPTON, Ferris; F. W. RUSHING, *Fort Worth*; S. KENNEDY, Grapeland; W. W. WIMER, *Honey Grove*; J. E. ADKISSON, Merkel; T. M. MORRIS, Mount Calm; W. E. LONG, Pearland; B. B. LILES, Staples.

To Fort Sam Houston, Texas, Lieut. T. F. HARRIS, New Willard.

Utah

To Camp Dodge, Iowa, base hospital, for instruction, Lieut. S. G. ROTHWELL, Murray.

To Fort Oglethorpe, base hospital, for instruction, Capt. F. L. PETERSON, Salt Lake City.

To Fort Riley, base hospital, for instruction, Capt. F. L. PETERSON, Salt Lake City. *For instruction, Capt.* S. D. CALONGE, Salt Lake City.

Vermont

To Camp Crane, Pa., Lieut. L. E. McKINLAY, Newbury.

To Camp Hancock, Ga., base hospital, Lieut. C. A. LOFTIS, St. Albans.

To Fort Oglethorpe for instruction, Lieut. H. B. HINMAN, Enosburg Falls.

Virginia

To Camp Meade, Md., Lieut. C. WEISIGER, Cumberland.

To Camp Wadsworth, S. C., Lieut. J. C. BARDIN, University.

To Fort Oglethorpe for instruction, Capt. A. P. DERBY, Monrovia; Lieuts. B. A. RICE, Forest Depot; J. M. LEWIS, Manassas; J. W. ROBERTSON, Onancock; W. P. HOY, Petersburg.

To New York, Neurological Institute, for instruction, Lieut. J. S. WEITZEL, Richmond.

Washington

To Camp Lewis, Wash., Lieuts. J. R. PETERSON, Seattle; E. J. LAWRENCE, Spokane; G. W. WIMBERLY, Toppenish.

To Fort Riley for instruction, Lieut. L. F. LUNDY, Seattle.

West Virginia

To Fort Oglethorpe for instruction, Capts. W. E. GRIM, Cameron; O. S. GRIBBLE, Clarksburg; Lieuts. F. O. MARPLE, Huntington; J. A. BAKER, Shirley; A. R. GIRARD, West Columbia.

To Newport News, Va., Lieut. G. L. STRAUB, Welch.

Wisconsin

To Camp Custer, Mich., Lieut. W. L. HERNER, Milwaukee.

To Camp Dodge, Iowa, base hospital, for instruction, Lieut. R. M. CARTER, Green Bay.

To Fort Oglethorpe for instruction, Lieut. D. B. DISHMAKER, Kewaunee.

To Fort Riley for instruction, Lieuts. A. D. ANDRUS, Ashland; A. M. ROSENHEIMER, Fox Lake; L. J. SIMON, Haricon; G. W. REIS, Junction City; C. L. McCOLLUM, Manitowoc; S. BERGLAND, Marinette; J. J. EISENBERG, L. J. FOLEY, G. T. SAVAGE, Milwaukee; E. C. CARY, Reedsville.

To New Haven, Conn., Capt. R. L. WILLIAMS, Statesan.

Wyoming

To Fort Riley for instruction, Capt. W. M. LACEY, Cheyenne.

ORDERS TO OFFICERS OF THE MEDICAL CORPS, U. S. ARMY

Alabama

To Camp Crane, Pa., from Camp Hancock, Capt. G. J. WINTHROP, Mobile; from Camp Jackson, Capt. N. P. COCKE, Birmingham. Base hospital, from Camp Lee, Lieut. D. J. LONG, Prichard.

To Camp Devens, Mass., base hospital, for instruction, from Rockefeller Institute, Lieut. M. J. HEATH, Pratt City.

To Camp Grant, Ill., base hospital, from Fort Oglethorpe, Lieut. A. L. GASTON, Ensley. *To examine the command* for nervous and mental diseases, from Ann Arbor, Lieut. M. L. MOORER, Mount Vernon.

To Camp Lee, Va., as orthopedic surgeon, from Fort Oglethorpe, Capt. E. L. SCOTT, Birmingham.

To Camp Meade, Md., base hospital, from Fort Oglethorpe, Lieut. H. A. LEYDEN, Anniston.

To Camp Sevier, S. C., base hospital, from Fort Oglethorpe, Major H. S. WILKINSON, Montgomery.

To Camp Shelby, Miss., from Camp McClellan, Lieut.-Col. J. T. AYDELOTTE.

To Camp Sheridan, Ala., base hospital, from Camp Jackson, Major J. M. DEDMAN, Birmingham.

To Camp Sherman, Ohio, as division surgeon, from Camp Sheridan, Lieut.-Col. W. T. CADE, Jr.

To Fort Oglethorpe, evacuation hospital, from Camp Gordon, Lieut. E. C. HAGLER, Northport; from Camp McClellan, Major J. N. BAKER, Montgomery; from Camp Wadsworth, Capt. W. L. THORNTON, Birmingham.

Arkansas

To Camp Crane, Pa., mobile hospital, from Camp Logan, Lieut. J. L. SMILEY, Siloam Springs.

To Camp McClellan, Ala., from Fort Riley, Lieut. C. M. BROOKS, Roland.

California

To Camp Crane, Pa., from Camp Kearney, Capts. W. H. GILBERT, Los Angeles; V. PLETH, Sonora. Base hospital, from Camp Kearney, Lieut. B. W. JOHNSON, Dos Palos.

To Camp Knox, Ky., from Rochester, Minn., Lieut. F. S. RYAN, San Jose.

To Camp McClellan, Ala., base hospital, from Camp Kearney, Capt. T. C. McCLEAVE, Oakland.

To Camp Wheeler, Ga., base hospital, from Fort Oglethorpe, Lieut. H. D. WILLIAMS, San Francisco.

To Fort Oglethorpe, from Camp Kearney, Capt. M. P. BURNHAM, Burlingame. Evacuation hospital, from San Francisco, Capt. A. F. HIGGINS, Sacramento.

To Lakewood, N. J., from Boston, Lieut. O. W. BUTLER, Los Angeles.

Colorado

To Camp Crane, Pa., evacuation hospital, from Camp Pike, Capt. T. L. A. SHAFFER, Salida.

To Camp MacArthur, Texas, from Fort Logan, Lieut.-Col. J. R. BARBER.

To Fort Bliss, Texas, base hospital, from Baltimore, Lieut. L. G. BROWN, Colorado Springs.

To Fort Riley for instruction, Capt. W. McCONNELL, Monument.

To Rochester, Minn., Mayo Clinic, for instruction, and on completion *to Camp Custer, Mich.*, from Fort Riley, Lieut. G. A. ASHBAUGH, Central City.

The following order has been revoked: *To Camp Crane, Pa.*, from Camp Cody, Capt. E. G. GRIFFIN, Denver.

Connecticut

To Camp Crane, Pa., base hospital, from Camp Meade, Lieut. J. F. SAGARINO, Hartford; from Fort Oglethorpe, Lieut. E. T. FALSEY, New Haven.

To Camp Dix, N. J., base hospital, for instruction, from Rockefeller Institute, Lieut. J. T. H. POWERS, Bridgeport.

To Camp Gordon, Ga., base hospital, for instruction, from Fort Oglethorpe, Lieut. R. W. LOVE, Ridgefield.

To Camp Grant, Ill., evacuation hospital, from San Francisco, Capt. W. P. BURKE, New Haven.

To Camp Upton, N. Y., base hospital, from Fort Oglethorpe, Lieut. W. F. REARDON, Hartford.

To Lakewood, N. J., Lieut. H. A. SOLOMON, Waterburg.

Delaware

To Camp Greene, N. C., base hospital, from Camp Dix, Capt. S. M. D. MARSHALL, Milford.

District of Columbia

To Camp Crane, Pa., from Fort Oglethorpe, Major A. B. HOOE, Washington.

To Camp Dix, N. J., from Syracuse, Major J. S. HOUGH, Washington.

To Colonia, N. J., for instruction, from Fort Oglethorpe, Lieut. S. BRICKER, Washington.

To Fort Ontario, N. Y., for instruction, from Camp Sherman, Lieut. J. B. G. CUSTIS, Washington.

To Hoboken, N. J., from Walter Reed General Hospital, Lieut.-Col. A. W. MORSE. Evacuation hospital, from Williamsbridge, Lieut. J. A. CAHILL, Jr., Washington.

To Norfolk, Mass., from the Surgeon-General's Office, Major R. R. WILLIAMS, Washington.

To Washington, D. C., Surgeon-General's Office, from Walter Reed General Hospital, Lieut.-Col. H. J. NICHOLS.

Florida

To Army Medical School for instruction, from Arcadia, Lieut. J. W. EDMONDSON, Arcadia.

To Camp Crane, Pa., mobile hospital, from Camp McClellan, Lieut. W. H. WEIRICH, Jacksonville.

To Camp MacArthur, Texas, for instruction, from Fort Oglethorpe, Lieut. F. W. SCHULTZ, Sarasota.

To Fort Oglethorpe for instruction, Capt. D. FORSTER, New Smyrna.

To Rochester, Minn., Mayo Clinic, for instruction, and *on completion to his proper station*, from Camp McClellan, Capt. W. B. MOON, Lakeland.

Georgia

To Camp Crane, Pa., from Camp Pike, Lieut. C. USHER, Savannah; from Fort Sam Houston, Capt. J. D. MANGET, Atlanta. Base hospital, from Camp Dix, Capt. J. K. TRAIN, Savannah; from Fort McPherson, Lieut. W. P. PHILIPS, Oakhurst; from Fort Oglethorpe, Lieut. W. P. ALLEN, Woodbury; from Fort Slocum, Lieut. H. J. PEAVY, Jr., Byron. Evacuation hospital, from New Haven, Lieut. W. H. MALONE, Villa Rica. Mobile hospital, from Camp Wheeler, Capt. W. F. CROSS, Cassville.

To Camp McClellan, Ala., from Camp Wheeler, Lieut.-Col. A. W. SCHOENLEBER. Base hospital, from *Fort McPherson*, Capt. J. F. DENTON, Atlanta; from Fort Oglethorpe, Lieut. E. L. BISHOP, Savannah.

To Camp Meade, Md., evacuation hospital, from Camp Devens, Lieut. R. L. RHODES, Augusta.

To Camp Sheridan, Ala., base hospital, from Fort Oglethorpe, Lieut. C. B. GREER, Brunswick.

To Camp Upton, N. Y., Capt. F. F. FLOYD, Statesboro.

To Colonia, N. J., from Boston, Lieut. G. Y. MASSENBURG, Macon. For instruction, from Fort Oglethorpe, Capt. J. M. BARNETT, Albany.

To Fort Oglethorpe, base hospital, from Camp Bowie, Capt. T. H. STEWART, Atlanta. Evacuation hospital, from Camp Gordon, Lieut. J. H. CAMPBELL, Jefferson. For instruction, Lieut. J. T. MOORE, Sycamore.

To Pittsburgh, Pa., Carnegie Institute, and University of Pittsburgh, from Camp Meade, Lieut. W. M. GERTMAN, Hazelhurst.

To Roland Park, Md., Capt. J. D. CROMER, Atlanta.

The following order has been revoked: *To report to the commanding general*, Southeastern Department, Lieut. T. M. VORBRINCK, Savannah.

Idaho

To Camp Crane, Pa., from Camp Lewis, Capt. W. S. TITUS, Boise.

To Camp Dodge, Iowa, from Fort Logan, Lieut. C. W. SLUSSER, Grangeville.

To Hoboken, N. J., Capt. H. C. MOWERY, Wallace.

Illinois

To Army Medical School for instruction, from Camp Zachary Taylor, Lieut. W. S. NEEDHAM, Hanna City; *from* Columbus Barracks, Lieut. H. D. THORNBURG, Chicago.

To Azalea, N. C., from New Haven, Capt. T. A. HOGAN, Chicago.

To Camp Bowie, Tex., base hospital, from Fort Oglethorpe, Lieut. W. W. KUNTZ, Baylis. Base hospital, for instruction, from Fort Oglethorpe, Lieut. I. H. CHILCOTT, Chicago.

To Camp Crane, Pa., from Camp Bowie, Capt. M. PFEIFFENBERGER, Alton; from Camp Dix, Lieut. S. F. KUBALA, Chicago; from Camp Dodge, Capt. W. F. SCOTT, Melrose Park; from Camp Joseph E. Johnston, Lieut. J. T. GREGORY, Chicago; from Camp Logan, Capt. L. P. KUHN, Chicago; Lieut. H. HOFMANN, Chicago; from Camp Pike, Capt. F. A. NORRIS, Jacksonville, from Fort McHenry, Capt. J. B. MOORE, Zeigler; from Fort Oglethorpe, Capt. F. W. BRIAM, Bloomington. Base *hospital*, from Camp Cody, Lieut. E. B. MILLER, Chicago; from Camp Zachary Taylor, Major W. W. HAMBURGER, Chicago; from Fort Oglethorpe, Capt. E. F. DAUM, Chicago; from New Haven, Lieut. B. G. R. WILLIAMS, Paris. Evacuation hospital, *from* Camp *Gordon*, Capt. G. A. LONGBRAKE, Galesburg. Mobile hospital, from Fort Sill, Lieut. J. E. HUNTER, Chicago.

To Camp Custer, Mich., from Camp Grant, Capt. S. F. HENRY, Ellingham.

To Camp Dodge, Iowa, base hospital, for *instruction*, from Iowa Falls, Capt. W. F. SCOTT, Melrose Park.

To Camp Grant, Ill., Lieut. T. W. RENNIE, Chicago.

To Camp Greene, N. C., base hospital, from Fort Oglethorpe, Lieut. G. E. PFEIFFER, Chicago.

To Camp Hancock, Ga., base hospital, for instruction, from Rockefeller Institute, Lieut. E. H. SEIFERT, Chicago.

To Camp Lee, Va., to examine the command for nervous and mental diseases, from Ann Arbor, Lieut. H. E. RANDOLPH, East Moline.

To Camp McClellan, Ala., from Fort Riley, Lieut. R. C. VERNOR, Nashville.

To Camp Meade, Md., evacuation hospital, *from Fort Oglethorpe*, Lieut. G. W. ROSS, Watseka.

To Camp Pike, Ark., base hospital, from Fort Oglethorpe, Capt. W. A. PORTER, Chicago.

To Camp Sevier, S. C., as orthopedic surgeon, from Fort Oglethorpe, Lieut. S. P. BLIM, Crete. Base hospital, from Fort Oglethorpe, Lieut. J. N. BUCHANAN, Freeport.

To Camp Shelby, Miss., base hospital, for instruction, from Fort Oglethorpe, Lieut. P. T. DIAMOND, Evanston.

To Camp Wadsworth, S. C., base hospital, from Camp Cody, Major R. T. WOODYATT, Evanston; from Fort Oglethorpe, Lieut. J. F. DEAL, Springfield.

To Camp Zachary Taylor, Ky., field hospital, Lieut. S. WOLF, Chicago.

To Champaign, Ill., from Fort Oglethorpe, Lieut. G. S. GALFORD, Normal.

To Colonia, N. J., for instruction, from Fort Oglethorpe, Lieut. D. C. SIGWORTH, Chicago.

To Detroit, Mich., from Fort Riley, Lieut. H. H. BEIL, Chicago.

To Fort Oglethorpe, evacuation hospital, from Boston, Capt. W. F. McNARY, East St. Louis; *from Camp Beauregard, Capt. D. B.* HAYDEN, Chicago; from Camp Gordon, Lieut. A. E. HUBBARD, Peoria; from Camp Joseph E. Johnston, Lieut. G. L. McWHORTER, Chicago. For instruction, Lieuts. A. J. C. SCHWARTZ, Chicago; L. W. FULTON, New Berlin.

To Fort Ontario, from Camp Lewis, Lieut. R. W. STEARNS, Chicago; from Camp Zachary Taylor, Lieut. F. F. FRAIDER, Chicago.

To Hoboken, N. J., from New Haven, Lieut. W. A. DANIELSON, La Grange.

To Jefferson Barracks, Mo., from Fort Oglethorpe, Lieut. R. D. LUSTER, Granite City.

To Lakewood, N. J., from Boston, Capt. W. E. SHACKLETON, Chicago.

To Madison Barracks, N. Y., from Williamsbridge, Capt. C. R. SANDERSON, *Bloomington*.

To Mineola, N. Y., Hazelhurst Field, from Garden City, Lieut. G. C. OTRICH, Belleville. For instruction, Capt. C. M. ROBERTSON, Chicago.

To New Haven, Conn., Yale Army Laboratory School, for instruction, Lieut. I. PILOT, Chicago.

To Pittsburgh, Pa., Carnegie Institute, and University of Pittsburgh, from Camp Meade, Lieut. W. F. ALLISON, Paris.

To report to the commanding general, Central Department, from Fort Des Moines, Lieut. H. L. KAMPEN, Monmouth.

To Saltville, Va., from Army Medical School, Lieut. H. L. LeSAULNIER, Red Bud.

To San Diego, Calif., Rockwell Field, from Mineola, Major F. CARY, Chicago.

The following orders have been revoked: *To Camp A. A. Humphreys, Va.*, Lieut. F. E. SENEAR, Chicago. *To Camp Gordon, Ga.*, from Fort Oglethorpe, Capt. W. W. HOYT, Chicago.

Indiana

To Camp Beauregard, La., base hospital, for instruction, from Fort Oglethorpe, Lieut. J. P. GIBSON, Owensville.

To Camp Crane, Pa., from Camp Zachary Taylor, Capt. A. L. BRAMKAMP, Richmond. Base hospital, from Camp Custer, Lieut. C. J. ADAMS, Kokomo; from Camp Sevier, Capt. F. A. TABOR, Terre Haute; from Fort Oglethorpe, Lieut. W. F. CRAFT, Linton; from Walter Reed General Hospital, Lieut. H. L. BELL, Knox. Evacuation hospital, *from Camp Dodge, Lieut.* R. C. HAMILTON, Indiana Harbor; from Fort Oglethorpe, Capt. E. M. HOOVER, Elkhart.

To Camp Jackson, S. C., base hospital, for instruction, from Fort Oglethorpe, Capt. H. H. WHEELER, Indianapolis.

To Camp McClellan, Ala., from Fort Riley, Capt. C. A. DRESCH, Mishawaka; Lieut. E. O. NEWLIN, Fontanet. Base hospital, from Camp Abraham Eustis, Capt. W. W. ROSS, La Porte; from Fort Oglethorpe, Lieuts. S. F. TEAFORD, *Paoli*; H. G. WEISS, *Rockport*.

To Camp Meade, Md., evacuation hospital, from Camp Pike, Capt. O. L. McCAY, Romney.

To Camp Travis, Texas, base hospital, for instruction, from Fort Oglethorpe, Lieut. H. L. CUNNINGHAM, Ashley.

To Camp Zachary Taylor, Ky., base hospital, from Fort Oglethorpe, Lieut. F. A. METTS, Bluffton.

To Colonia, N. J., from Walter Reed General Hospital, Lieut. L. C. SAMMONS, Shelbyville.

To Danville, N. Y., from Ann Arbor, Lieut. E. K. HOLT, Longcliff.

To Fort Benjamin Harrison, from Camp Dix, Lieut. O. M. JOHNSON, Kokomo.

To Fort McPherson, Ga., for instruction, from Camp Gordon, Lieut. M. M. *MORAN, Portland*.

To Fort Oglethorpe, evacuation hospital, from Camp Gordon, Lieut. L. E. SOMERS, Craigville. For instruction, Lieut. M. M. WELLS, Fairland.

To Fort Ontario, N. Y., from Fort Oglethorpe, Lieut. R. L. SMITH, Indianapolis.

To Hoboken, N. J., from Fort Oglethorpe, Lieut. C. B. COMPTON, Michigantown.

To Madison Barracks, N. Y., from Edgewood, Md., Capt. J. L. ALLEN, Greenfield.

To Pittsburgh, Pa., Carnegie Institute, and University of Pittsburgh, from Camp Meade, Lieut. H. H. BOTTS, Colfax.

The following order has been revoked: *To Pittsburgh, Pa.*, from Camp Sevier, Capt. W. E. GEORGE, Indianapolis.

Iowa

To Camp Crane, Pa., from Camp Dodge, Capt. C. S. JAMES, Centerville. Base hospital, from Camp Logan, Lieut. C. H. GRAENING, Waverly. Evacuation hospital, from Camp Devens, Lieut. J. G. CLAPSADDLE, Burt.

To Camp Grant, Ill., base hospital, *from Fort Oglethorpe, Capt.* H. E. McCALL, Clearfield.

To Camp Lee, Va., from May's Landing, N. J., Major G. R. PLUMMER, Cresco.

To Camp McClellan, Ala., from Fort Riley, Lieut. R. J. MATTHEWS, Clarinda. Base hospital, from Fort Oglethorpe, Lieut. J. J. BEATTY, Farragut.

To Camp Wadsworth, S. C., from Camp Greene, Lieut. G. H. STEELE, Belmont.

To Camp Wheeler, Ga., base hospital, from Fort Oglethorpe, Lieut. C. O. YENERICH, Rockford.

To Camp Zachary Taylor, Ky., field hospital, from Fort Riley, Lieut. J. W. SELLARDS, Clarinda.

To Fort Oglethorpe, evacuation hospital, *from* Camp Jackson, Capt. G. F. HARKNESS, Davenport.

To Iowa Falls, Iowa, Ellsworth College, from Camp Dodge, Lieut. C. A. MANAHAN, Marengo.

To Washington, D. C., for conference, and on completion *to Detroit, Mich.*, from Fort Des Moines, Lieut.-Col. A. T. COOPER.

Kansas

To Camp Crane, Pa., from Camp Gordon, Capt. A. D. JONES, Wichita. Evacuation hospital, from Camp Devens, Lieuts. H. N. ALEXANDER, F. L. LOVELAND, Topeka; from Fort Oglethorpe, Capt. M. G. SHELLY, Mulvane. Mobile hospital, *from* Fort Riley, Lieut. C. W. ZUGG, Great Bend.

To Camp Dix, N. J., from Fort Riley, Lieut.-Col. L. R. POUST.

To Camp Knox, Ky., from Camp Cody, Lieut. W. G. BURTON, Wichita.

To Camp McClellan, Ala., from Fort Oglethorpe, Capt. E. A. REEVES, Kansas City; Lieut. R. ALGIE, Linn; from Fort Riley, Lieut. J. B. BLADES, Randall.

To Camp Zachary Taylor, Ky., field hospital, from Fort Riley, Lieuts. M. HALL, McPherson; E. G. PADFIELD, Saline.

Kentucky

To Camp A. A. Humphreys, Va., from Fort Oglethorpe, Lieut. H. C. BLOUNT, Leesburg.

To Camp Crane, Pa., from Fort Oglethorpe, Capt. L. H. KAHN, Louisville. Base hospital, from Camp Meade, Lieut. J. W. MARTIN, LaCenter.

To Camp Meade, Md., as orthopedic surgeon, from Fort *Oglethorpe*, Lieut. B. A. WASHBURN, Paducah.

To Camp Sheridan, Ala., base hospital, from Fort Oglethorpe, Lieut. E. L. PIRKEY, Louisville.

To Camp Zachary Taylor, Ky., base hospital, from Ann Arbor, Lieut. E. MOORMAN, Harned.

To Fort Oglethorpe for instruction, from duty as a *private*, Lieut. J. T. P. WICKLIFFE, Wickliffe.

To Mineola, N. Y., Hazelhurst Field, from Camp Wadsworth, Capt. G. A. ROBERTSON, Louisville.

Louisiana

To Camp Crane, Pa., base hospital, *from Camp Lee*, Lieut. T. LATIOLOIS, New Orleans.

To Camp Custer, Mich., to examine the command for nervous and mental diseases, from Ann Arbor, Capt. T. W. EVANS, Jackson.

To Camp MacArthur, Texas, base hospital, for instruction, from Fort Oglethorpe, Lieut. C. DEAN, Bogalusa.

To Fort Oglethorpe, base hospital, from Camp Beauregard, Lieut. E. S. KEITZ, New Orleans. Evacuation hospital, from Camp Shelby, Capt. R. E. WINDHAM, Merryville.

Maine

To Camp Crane, Pa., base hospital, from Camp Devens, Lieut. J. E. POULIN, Augusta; from Camp Dix, Capt. D. W. WENTWORTH, Sanford; from Camp Lee, Major T. O. VANAMEE, Portland.

To Pittsburgh, Pa., Carnegie Institute, and University of Pittsburgh, from Camp Meade, Lieut. R. W. CLARK, Deer Isle.

Maryland

To Camp Crane, Pa., base hospital, from Camp Meade, Lieut. C. L. LUCKETT, Baltimore.

To Camp John Wise, Texas, from Fort Bliss, Major J. DIBBLE, Fort Washington.

To Camp Meade, Md., base hospital, for instruction, from Rockefeller Institute, Lieut. W. A. DARBY, Baltimore.

To Camp Wadsworth, S. C., base hospital, from Fort *Oglethorpe*, Lieut. G. B. BROWN, *Jr., Baltimore*.

To Cape May, N. J., from New York, Lieut. J. H. BAIRD, Baltimore.

To Fort Oglethorpe, evacuation hospital, *from* Camp Cody, Major H. R. CARTER, Jr., Baltimore.

To Hoboken, N. J., base hospital, from Camp Upton, *Lieut.* J. G. RUNKEL, Catonsville; from Fort Oglethorpe, Capt. W. H. HOPKINS, Annapolis.

To New Haven, Conn., Yale Army Laboratory School, *from* Southern Department, Lieut. W. C. VON GLAHN, Baltimore.

To Pittsburgh, Pa., from Army Medical School, Lieut. H. H. WARNER,, Baltimore.

To Washington, D. C., Surgeon-General's Office, from Walter Reed General Hospital, Lieut. H. L. QUICKEL, Takoma Park.

Massachusetts

To Aberdeen, Md., from Baltimore, Lieut. H. C. PERKINS, *Boston*.

To Boston, Mass., Harvard Graduate School of Medicine, for instruction, from Fort Oglethorpe, Lieut. M. L. ALLING, Lowell.

To Camp Crane, Pa., from Camp Devens, Lieut. A. R. GARDNER, Lowell; from *Camp Jackson, Lieut.* W. A. BISHOP, Abington; from Walter Reed General Hospital, Lieut.-Col. F. B. LUND, *Boston*. *Base* hospital, from Camp Devens, Lieut. G. A. BUCKLEY, Brockton; from Fort Myer, Capt. E. B. FINCH, Greenfield; from Fort Oglethorpe, Capt. E. FLAGG, Boston; *from New York, Lieut.* A. J. GANLEY, Methuen. Evacuation hospital, *from Camp* Dix, Lieuts. C. E. ALLARD, F. C. HALL, Boston.

To Camp Grant, Ill., evacuation hospital, from *Camp Beauregard*, Lieut. A. N. FREGEAU, Fitchburg.

To Camp Greene, N. C., base hospital, for *instruction, from* Rockefeller Institute, Lieut. L. C. DURSTHOFF, Lowell.

To Camp Meade, Md., base hospital, from New Haven, Lieut. H. M. BAKER, Boston.

To Camp Sheridan, Ala., base hospital, *from Fort* Oglethorpe, Lieut. H. E. LYNCH, Holyoke.

To Camp Upton, N. Y., from Camp Sherman, *Capt.* H. H. SUMNER, Lowell.

To Camp Wadsworth, S. C., base hospital, from Fort Oglethorpe, Capt. G. H. MAXFIELD, Chelsea. Base hospital, for instruction, from Rockefeiler Institute, Lieut. J. H. GALLAGHER, Chicopee.

To Camp Wheeler, Ga., base hospital, from Fort Oglethorpe, Capt. R. J. WARD, Worcester.

To Fort Oglethorpe, for instruction, Lieut. J. C. WARD, Marlboro.

To Fort Ontario, N. Y., for instruction, from Fort Oglethorpe, Capt. F. K. SHAW, Concord.

To Lakewood, N. J., from Fort Sill, Lieut. W. F. COTTING, Boston.

The following orders have been revoked: *To Camp Crane, Pa.*, base hospital, from Richmond, Va., Capt. G. L. TOBEY, Jr., Boston. *To Fort Meyer, Va.*, from Camp Wheeler, Lieut. F. C. LEAVITT, Belmont.

Michigan

To Camp Crane, Pa., from Camp Wadsworth, Capt. C. GEORG, Jr., Ann Arbor; from New York, Capt. R. C. STONE, Battle Creek. Base hospital, from Camp Meade, Lieut. W. D. RYAN, Detroit; from Fort Oglethorpe, Lieut. C. F. DUBOIS, Detroit. Evacuation hospital, from Boston, Lieut. C. E. TRUESDELL, Denton; from Camp Custer, Capt. C. D. BROOKS, Detroit; from Camp Grant, Capt. R. J. E. ODEN, Cadillac.

To Camp Grant, Ill., evacuation hospital, from Fort Des Moines, Capt. W. K. REXFORD, Ypsilanti. *To examine the command* for nervous and mental diseases, from Ann Arbor, Capt. P. J. DE PREE, Zeeland.

To Camp Hancock, Ga., base hospital, from Fort Oglethorpe, Capt. F. T. F. STEPHENSON, Detroit.

To Camp Jackson, S. C., base hospital, for instruction, from Fort Oglethorpe, Capt. W. H. FORCE, Ludington.

To Camp Zachary Taylor, Ky., field hospital, from Camp Perry, Capt. H. W. KNAPP, Battle Creek; from Fort Oglethorpe, Capt. J. W. ORR, Flint.

To Colonia, N. J., from Boston, Major N. S. MacDONALD, Houghton.

To Fort Logan, Colo., from Camp Custer, Lieut.-Col. H. M. MELEJAN, Ann Arbor.

To Fort Oglethorpe, evacuation hospital, from Camp Hancock, Lieut. L. H. TOWER, Battle Creek., For instruction, from Camp Logan, Capt. N. J. PIKE, Saginaw.

To Fort Riley for instruction, Capt. D. V. L. GLEYSTEEN, Holland.

To Mineola, N. Y., Hazelhurst Field, from Fort Oglethorpe, Lieut. F. W. HANNUM, Muskegon.

Minnesota

To Camp Crane, Pa., from Camp Dodge, Capt. H. P. BACON, Milaca; from New Haven, Capt. C. R. CHRISTENSON, Starbuck. Base hospital, from Camp Dix, Capt. F. W. BRIGGS, Moorhead; from Fort Oglethorpe, Lieut. F. T. BENOIT, Slayton. Mobile hospital, from Fort Oglethorpe, Capt. A. E. COMSTOCK, St. Paul.

To Camp Custer, Mich., for instruction, from Fort Oglethorpe, Lieut. W. B. MARTIN, Fergus Falls.

To Camp Knox, Ky., from Camp Cody, Capt. O. H. WILCOX, Minneapolis.

To Camp Sheridan, Ala., base hospital, from Fort Oglethorpe, Capt. C. P. ROBBINS, Winona.

To Camp Zachary Taylor, Ky., field hospital, from Fort Riley, Lieut. S. S. HESSELGRAVE, St. Paul.

To Columbus, Ga., from Camp Lee, Lieut. J. R. McVAY, Rochester.

To Fort Oglethorpe, base hospital, from Camp McClellan, Lieut. P. S. EPPERSON, Biwabik. Evacuation hospital, from Camp Sevier, Capt. H. L. ULRICH, Minneapolis.

To Lakewood, N. J., from Washington, Lieut. P. BLANCO, Rochester.

To Rochester, Minn., Mayo Clinic, as instructor, from the Surgeon-General's Office, Col. C. H. MAYO, Rochester.

To Rockefeller Institute for instruction in the treatment of infected wounds, and on completion *to Camp Zachary Taylor, Ky.*, base hospital, for instruction, from Fort Oglethorpe, Capt. W. J. COCHRANE, Lake City.

Mississippi

To Camp Crane, Pa., base hospital, from Fort Oglethorpe, Capt. J. CRISLER, Jackson.

To Camp Forrest, Ga., from Camp Shelby, Major H. L. ARNOLD.

To Camp Greene, N. C base hospital, from Camp Sherman, Capt. [illegible] Valley; from Fort Oglethorpe, Lieut. F. [illegible]

[illegible] ation hospital, from Camp Gordon, Lieut. [illegible] m Camp Jackson, Capt. D. L. WALKER, Vosburg.

Missouri

To Camp Abraham Eustis, Va., from Fort Riley, Capt. J. R. MABEE, Huntsville.

To Camp Crane, Pa., from Camp Custer, Capt. C. L. COOPER, Kansas City; from Camp Hancock, Capt. W. J. FERGUSON, Sedalia; from Camp Logan, Lieut. L. P. FORGRAVE, St. Joseph; from Camp Sevier, Capt. H. E. HAPPEL, St. Louis; from Camp Sheridan, Capt. J. R. GREEN, Independence; from Fort Bliss, Capt. C. T. BELL, Maryville; from Fort Sam Houston, Lieut. A. M. GREGG, Joplin. Base hospital, from Camp Dodge, Capt. O. W. KRUEGER, Kansas. Evacuation hospital, from Camp Lee, Lieut. J. B. McCUBBIN, Fulton; from Walter Reed General Hospital, Capt. C. H. HECKER, St. Louis.

To Camp Dodge, Iowa, from Fort Sill, Major F. W. SHAW, Mount Vernon. *To examine the command* for nervous and mental diseases, from Ann Arbor, Lieut. T. N. TOOMEY, St. Louis.

To Camp Kendrick, N. J., from Camp Beauregard, Major W. S. LAWRENCE, St. Louis.

To Camp Meade, Md., from Camp Dodge, Major F. W. SHAW, Mount Vernon. Evacuation hospital, from Camp Logan, Capt. G. A. GRIOT, St. Louis.

To Camp Sevier, S. C., base hospital, from Fort Oglethorpe, Capt. R. C. HARRIS, St. Louis.

To Camp Wheeler, Ga., from Fort Oglethorpe, Capt. H. B. GETTYS, St. Louis. Base hospital, from Fort Oglethorpe, Capt. J. L. MYERS, Kansas City; Lieut. J. O'CONNELL, St. Louis.

To Camp Zachary Taylor, Ky., field hospital, from Fort Riley, Capt. F. L. OGILVIE, Bloggett.

To Chicago, Ill., from Fort Riley, Lieut. J. H. YOUNG, Ozark.

To Colonia, N. J., for instruction, from Fort Oglethorpe, Lieut. F. E. CHASE, St. Louis.

To Fort Oglethorpe for instruction, from Syracuse, Capt. G. H. MORELAND, Kansas City.

To Lexington, Va., Washington and Lee University, from Nashville, Tenn., Lieut. W. J. BILLETER, Bynumville.

To Rockefeller Institute for instruction in the treatment of infected wounds, and on completion *to Colonia, N. J.*, for instruction, from Camp Dix, Capt. G. D. McCALL, Fulton.

To Williamsbridge, N. Y., from Fort Oglethorpe, Capt. O. W. CLABAUGH, Sedalia.

Montana

To Camp Crane, Pa., evacuation hospital, from Camp Dodge, Capt. A. T. GILHUS, White Sulphur Springs.

To Fort Oglethorpe for instruction, from New York, Lieut. A. G. BIDDLE, Butte.

To Mineola, N. Y., Hazelhurst Field, from Camp Joseph E. Johnston, Lieut. C. E. WHITEHEAD, Logan.

The following order has been revoked: *To Fort Oglethorpe* for instruction, Major W. C. RIDDELL, Helena.

Nebraska

To Camp Crane, Pa., from Camp Jackson, Major S. R. HOPKINS, Hastings. Base hospital, from Fort Riley, Capt. C. K. GIBBONS, Kearney.

To Camp Greene, N. C., base hospital, from Fort Oglethorpe, Capt. L. C. BLEICK, Omaha.

To Camp MacArthur, Texas, base hospital, from Fort Oglethorpe, Capt. W. P. HANEY, Omaha.

To Camp Pike, Ark., base hospital, from Fort Oglethorpe, Capt. R. P. STOOPS, Scottsbluff.

To Camp Sevier, S. C., base hospital, from Fort Oglethorpe, Capt. I. W. HAUGHEY, Aurora.

To Camp Wadsworth, S. C., base hospital, from Fort Oglethorpe, Lieut. A. J. BOREN, Hastings.

To Camp Zachary Taylor, Ky., field hospital, from Fort Riley, Lieut. F. N. TOWNLEY, Kenesaw.

To Dallas, Texas, Love Field, from Fort Omaha, Capt. R. CROOK, Winnetoon.

To Fort Riley for instruction, Lieut. A. A. SMITH, Hastings.

New Hampshire

To Camp Crane, Pa., base hospital, from Boston, Lieut. E. A. JONES, Manchester.

To Camp Sevier, S. C., base hospital, from Fort Oglethorpe, Lieut. J. J. BUCKLEY, Milton.

To Camp Sheridan, Ala., base hospital, from Fort Oglethorpe, Capt. P. J. McLAUGHLIN, Nashua.

To Fort Oglethorpe, evacuation hospital, from Camp Wadsworth, Capt. G. C. WILKINS, Manchester.

New Jersey

To Boston, Mass., Harvard Graduate School of Medicine, for instruction, from Camp Gordon, Lieut. D. A. CURTIS, Paterson.

To Camp Abraham Eustis, Va., from Jackron Barracks, Lieut. E. S. RAMSDELL, Camden.

To Camp Bowie, Texas, base hospital, from Fort Oglethorpe, Lieut. A. W. JUSTIN, Union Hill.

To Camp Crane, Pa., base hospital, from Camp Meade, Capt. F. R. SHEPPARD, Millville.

To Camp Gordon, Ga., base hospital, from Washington, Capt. D. E. WARREN, Passaic. Base hospital, for instruction, from Rockefeller Institute, Lieut. J. N. PANNULLO, Newark.

To Camp Jackson, S. C., base hospital, from Camp Las Casas, Major J. D. LIPPINCOTT, Newark.

To Camp Lee, Va., base hospital, for instruction, from Rockefeller Institute, Lieut. M. KUMMEL, Harrison.

To Camp McClellan, Ala., base hospital, from Camp Greene, Capt. N. K. BENTON, Newark; from Camp Shelby, Capt. E. J. MARSH, Paterson; from Fort Oglethorpe, Lieut. J. S. MARK, Chrome.

To Camp Meade, Md., from Syracuse, Major A. F. THOMPSON, East Orange.

To Camp Sevier, S. C., base hospital, for instruction, from Fort Oglethorpe, Capt. J. W. FARROW, Dover.

To Camp Wadsworth, S. C., base hospital, for instruction, from Fort Oglethorpe, Capt. C. W. EVELETH, West Orange.

To Fort McHenry, Md., from Hoboken, Lieut.-Col. L. J. OWEN.

[illegible] ase hospital, from Camp Meade, Major H. D. [illegible] For instruction, Lieut. R. B. JARRATT, [illegible]

To Fort Ontario, N. Y., for instruction, from Camp Dix, Capt. J. F. HAGERTY, Newark.

To Fort Screven, Ga., to examine the command for nervous and mental diseases, from Washington, Capt. F. C. HORSFORD, Newark.

To Hoboken, N. J., Major S. PATON, Princeton; from Baltimore, Lieut. W. A. NEWELL, Trenton.

To Lakewood, N. J., from Boston, Lieut. F. H. CARBER, Newton.

To New York, Cornell Medical College, for instruction, from Camp Holabird, Capt. F. A. FINN, Jersey City.

To Pittsburgh, Pa., for instruction, from Fort McPherson, Capt. P. E. BRUNDAGE, Grantwood.

To Plattsburgh Barracks, N. Y., from Mineola, Lieut. M. S. PATON, Princeton.

To Walter Reed General Hospital, D. C., from Camp Wheeler, Lieut. J. G. DENELSBECK, Trenton.

The following order has been revoked: *To Camp Hancock, Ga.*, base hospital, from Fort Oglethorpe, Lieut. R. J. VREELAND, Clifton.

New Mexico

To Camp Abraham Eustis, Va., from Camp Upton, Capt. A. C. PRATT, Gallup.

New York

To Army Medical School for instruction, from Camp Devens, Lieut. F. F. McGAULEY, Schenectady; from Camp Sevier, Lieut. T. M. CALLADINE, Perry.

To Azalea, N. C., from New Haven, Lieut. J. KAUNITZ, New York.

To Camp Humphreys, Va., base hospital, from Fort Oglethorpe, Lieuts. G. KORNFIELD, Brooklyn; M. KUPPERMAN, New York. *To examine the command* for nervous and mental diseases, from Ann Arbor, Lieut. J. V. SWIERAT, Kings Park; from Washington, Lieut. E. A. EVERETT, Middletown.

To Camp Abraham Eustis, Va., from Fort Oglethorpe, Lieut. S. KULKIN, New York.

To Camp Crane, Pa., from Camp Devens, Lieut. E. F. BRIGGS, Bedford Hills; from Camp McClellan, Lieut. E. W. WILKINS, Albany; from Camp Meade, Lieut. M. BELLIN, Albany. Base hospital, from Camp Devens, Capt. W. M. HALSEY, Oswego; from Camp Lee, Major C. D. NAPIER, Brooklyn; Lieut N. C. MARVEL, New York; from

Fort Oglethorpe, Capts. H. V. HOLCOM, Bellemore; A. S. ARMSTRONG, New York; J. R. BROWNELL, Perry; Lieut. R. L.
COOLEY, Buffalo; from New York, Major B. H. WHITBECK, New
York; from West Point, Ky., Lieut. L. D. SOPER, Smyrna. Evacua-
tion hospital, from Camp Custer, Major W. M. FORD, New York;
from Camp Devens, Lieut. M. A. THOMPSON, Buffalo; from Camp
Sherman, R. W. MORIARTY, New York; from Fort Oglethorpe, Lieut.
R. J. SHEA, New York.

To Camp Custer, Mich., from New Haven, Major J. S. BILLINGS,
New York.

To Camp Dix, N. J., from New Haven, Major B. F. KNAUSE,
Brooklyn.

To Camp Jackson, S. C., base hospital, from Camp Dix, Capt. J. C.
BIERWIRTH, Brooklyn. Base hospital, for instruction, Lieut. H.
COWAN, New York.

To Camp Joseph E. Johnston, Fla., base hospital, from Camp Jackson,
Capt. H. V. GUILE, New York.
Lieut.

To Camp Lee, Va., base hospital, from Army Medical School, Lieut.
R. E. MYERS, Cableskill.

To Camp McClellan, Ala., base hospital, from Biltmore, N. C., Capt.
A. V. MOSCHCOWITZ, New York; from Fort Oglethorpe, Lieut.
H. A. VOGEL, Albany. On completion *to the Surgeon-General's Office*,
from Washington, Major E. K. DUNHAM, New York.

To Camp Meade, Md., from Syracuse, Lieut. F. N. POTTS, Buffalo.
Base hospital, from Fort Oglethorpe, Lieut. G. A. DISTLER, Wood-
haven.

To Camp Sherman, Ohio, base hospital, for instruction, from Rocke-
feller Institute, Lieut. J. G. MORRESSEY, Yonkers.

To Camp Wadsworth, S. C., to examine the command for nervous
and mental diseases, from Ann Arbor, Lieut. J. J. LEARY, Utica.

To Camp Wheeler, Ga., from Camp Wadsworth, Major H. R. GAY-
LORD, Buffalo. Base hospital, from Fort Oglethorpe, Capt. E. W.
SHANK, New York.

To Cape May, N. J., from New York, Lieut. S. SILBERT, New
York; from Walter Reed General Hospital, Capt. J. KETTERLE,
Brooklyn.

To Colonia, N. J., for instruction, from Fort Oglethorpe, Lieut. W. A.
BEHAN, Binghamton.

To Columbus, Ga., from Camp Gordon, Major E. A. SOUTHALL,
Buffalo.

To Denver, Colo., from New Haven, Capt. H. A. CRAIG, Staten
Island.

To Fort Des Moines, Iowa, from Camp Jackson, Major O. M.
SCHWERDTFEGER, New York. For instruction, from Fort Ogle-
thorpe, Lieut. H. C. FALK, New York.

To Fort Oglethorpe, as instructor, from Camp Wheeler, Major J. P.
O'BRIEN, Albany. Evacuation hospital, from Camp Gordon, Lieut.
P. H. J. BUCKLEY, Buffalo; from Camp Hancock, Capt. H. G.
DUNHAM, New York; from Camp Jackson, Capts. I. M. HOLLY,
Brooklyn; H. S. FINCKE, Long Island City. For instruction, from
Camp Greene, Major D. C. WIGGIN, Rosebank.

To Fort Riley, base hospital, from Fort Oglethorpe, Capt. E. ADAMS,
New York.

To Hoboken, N. J., from Camp Dix, Lieut. S. B. DOYLE, Brooklyn;
from Fort Riley, Lieut. F. D. KEPPEL, Lincklaen. Base hospital,
from Camp Devens, Lieut. W. H. HAWKINS, New York.

To Lakewood, N. J., for instruction, from Fort Oglethorpe, Capt.
T. D. BUCHANAN, New York.

To Madison Barracks, N. Y., from Washington, Capt. A. E. SOPER,
New York.

To Newport News, Va., from Camp Jackson, Lieut. H. F. GOCKLEY,
New York.

To Pittsburgh, Pa., Carnegie Institute, and University of Pittsburgh,
from Camp Meade, Lieut. J. F. BROWNE, Rochester. Parkview Sta-
tion, from Camp Lee, Capt. E. F. SIBLEY, Kingston.

To Plattsburg Barracks, N. Y., from Syracuse, Capt. C. S. LITTLE,
Thiells.

To Rahway, N. J., from Boston, Mass., Lieut. T. L. McNAMARA,
Corning.

To Richmond, Va., Capt. G. N. SLATTERY, New York.

To San Diego, Calif., Rockwell Field, from San Antonio, Major
H. S. BARTHOLOMEW, New York.

To White Plains, N. Y., from Camp Las Casas, Major P. B.
CONNOLLY, New York.

The following orders have been revoked: *To Fort Oglethorpe* for
instruction, Lieut. E. C. MONTGOMERY, Brooklyn. *To New York*,
Neurological Institute, for instruction, Lieut. J. RESNIK, New York.
To Rockefeller Institute for instruction in the treatment of infected
wounds, Lieut. P. T. HARPER, Albany.

North Carolina

To Azalea, N. C., from New Haven, Capt. G. S. MacPHERSON,
Highlands.

To Camp Crane, Pa., from Camp Bowie, Capt. A. F. REEVES,
Asheville.

To Camp Grant, Ill., from Fort Oglethorpe, Lieut. J. B. LeGWIN,
Wilmington.

To Camp Hancock, Ga., base hospital, from Fort Oglethorpe, Capt.
R. F. YARBOROUGH, Louisburg; Lieut. C. F. STROSNIDER,
Goldsboro.

To Camp Lee, Va., base hospital, from Fort Oglethorpe, Lieut. G. C.
BATTLE, Asheville.

To Fort McPherson, Ga., from Fort Oglethorpe, Lieut. G. B. LYNCH,
Asheville.

To Fort Oglethorpe, evacuation hospital, from Camp Wheeler, Capt.
T. A. HATHCOCK, Norwood.

To Washington, D. C., Surgeon-General's Office, from Biltmore,
N. C., Lieut.-Col. W. H. SMITH.

North Dakota

To Camp Crane, Pa., evacuation hospital, from Fort Riley, Capt.
O. W. McCLUSKY, Carrington.

To Fargo, N. D., North Dakota Agricultural College, Lieut. C. L.
CALLANDER, Fargo.

To Fort Oglethorpe for instruction, Lieut. L. A. SHIPFER, Bismarck.

Ohio

To Camp A. A. Humphreys, Va., base hospital, from Fort Oglethorpe,
Lieut. M. D. PRUGH, Dayton.

To Camp Beauregard, La., as orthopedic surgeon, from Fort Ogle-
thorpe, Lieut. E. V. BERRY, Newcomerstown.

To Camp Bowie, Texas, from Camp Sherman, Lieut.-Col. H. B.
McINTYRE.

To Camp Crane, Pa., from Camp Jackson, Lieut. J. K. HAMILTON,
Youngstown. Base hospital, from Fort Oglethorpe, Capts. G. H. IRVIN,
Orville; C. L. JONES, Springfield; Lieuts. D. W. FELLERS, Bloomville; O. C. HENDERSON, Portland. Evacuation hospital, from Camp
Dix, Lieut. M. E. WILSON, Cincinnati; from Syracuse, Capt. H. B.
BLAKEY, Columbus.

To Camp Dix, N. J., base hospital, from Hoboken, Capt. C. D. HOY,
Columbus.

To Camp Gordon, Ga., base hospital, from Fort Oglethorpe, Lieut.
H. S. THOMPSON, Cleveland.

To Camp Grant, Ill., base hospital, from Fort Oglethorpe, Lieuts.
W. H. MILLER, Columbus; C. R. KING, Toledo. Base hospital for
instruction, from Fort Oglethorpe, Capt. W. E. GERNHARD, Cleveland.
Evacuation hospital, from Camp Cody, Lieut. A. A. STONE, Cleveland.

To Camp Hancock, Ga., base hospital, from Fort Oglethorpe, Capt.
H. M. FLOWER, Toledo.

To Camp McClellan, Ala., base hospital, from Fort Oglethorpe,
Lieuts. H. SILVER, Middletown; R. E. SINKEY, E. F. VETTER,
Toledo.

To Camp Pike, Ark., from Camp Custer, Lieut.-Col. E. F. McCAMPBELL, Columbus.

To Camp Sheridan, Ala., base hospital, from Fort Riley, Capt. E. R.
BROOKS, Cleveland.

To Camp Wheeler, Ga., base hospital, from Fort Oglethorpe, Lieut.
J. F. WRIGHT, Toledo.

To Camp Zachary Taylor, Ky., base hospital, from Fort Oglethorpe,
Capt. G. W. WILLIARD, Tiffin.

To Fort McPherson, Ga., for instruction, from Camp Crane, Lieut.
G. C. GUTHRIE, Uhrichsville.

To Fort Oglethorpe, base hospital, from Camp Cody, Lieut. R. S.
REICH, Cleveland. Evacuation hospital, from Camp Sevier, Capt.
H. B. DORNBLASSER, Springfield.

To Jefferson Barracks, Mo., from Fort Oglethorpe, Capt. E. M.
BROWN, Zanesville.

To Madison Barracks, N. Y., from Camp Meade, Capt. J. A. GOSLING, Tiffin.

To Mineola, N. Y., Hazelhurst Field, for instruction, from Arcadia,
Major C. P. GROVER, National Military Home.

To Plattsburg Barracks, N. Y., from Ann Arbor, Lieut. A. E.
KISER, Cincinnati.

To report to the commanding general, Central Department, Capt.
E. E. BONSTEEL, Warrensville.

To Washington, D. C., from Fort Sam Houston, Lieut. W. R.
CHYNOWETH, Dayton.

The following orders have been revoked: *To Camp Crane*, evacuation
hospital, from Camp Dix, Lieut. A. N. SMITH, Columbus. *To Camp
Hancock, Ga.*, base hospital, from Fort Oglethorpe, Lieut. T. HULICK,
Cincinnati. *To Fort Oglethorpe*, base hospital, from Army Medical
School, Major R. D. MADDOX, Cincinnati.

Oklahoma

To Biltmore, N. C., from Camp Shelby, Capt. R. E. RUNKLE, El
Reno.

To Camp Greene, N. C., base hospital, for instruction, from Fort
Oglethorpe, Lieut. S. E. GAYMAN, Tryon. Evacuation hospital, from
Fort Oglethorpe, Lieut. C. A. JOHNSTON, Kiowa.

To Camp McClellan, Ala., from Fort Oglethorpe, Lieut. O. G.
BACON, Davidson.

North Carolina

To Camp Polk, as sanitary inspector, from Camp Jackson, Capt.
J. H. STOLPER, Muskogee.

To Camp Zachary Taylor, Ky., field hospital, from Fort Riley, Lieut.
J. R. HOLLIDAY, Oklahoma City.

To New Haven, Conn., Yale Army Laboratory School, Southern
Department, Capt. F. B. SORGATZ, Oklahoma City.

To San Antonio, Texas, Kelly Field, from Fort Bayard, Lieut. M. C.
COMER, Clinton.

Oregon

To Camp Crane, Pa., from Camp Lewis, Lieut. G. L. BOYDEN,
Pendleton. Evacuation hospital, from Camp Lewis, Capt. W. JOHNSTON, Portland.

To Camp Zachary Taylor, Ky., field hospital, from Fort Riley, Lieuts.
A. D. MORRISON, Carlton; E. L. ZIMMERMAN, Eugene.

To Madison Barracks, N. Y., from Fort Oglethorpe, Lieut. C. C.
PETHERAM, Portland.

To Whipple Barracks, Ariz., from Camp Travis, Lieut. A. T.
BLACHLY, Portland.

Pennsylvania

To Camp Abraham Eustis, Va., from Fort Oglethorpe, Lieut. J. G.
KOSHLAND, Cassville.

To Camp Bowie, Texas, base hospital, from Fort Oglethorpe, Capt.
C. S. AITKEN, Philadelphia.

To Camp Crane, Pa., from Camp Bowie, Capt. S. C. SMITH, Phila-
delphia; from Camp Hancock, Capt. W. C. MINNICH, McKees Rocks;
from Camp Jackson, Lieut. J. D. KEIPER, Johnstown; from Camp
Sherman, Capt. W. L. CAMPBELL, New Castle; from Fort Ogle-
thorpe, Capt. T. EVANS, Jr., Pittsburgh. Base hospital, from Camp
Jackson, Major E. H. GOODMAN, Philadelphia; from Fort Ogle-
thorpe, Capt. J. B. McMURRAY, Washington; Lieuts. J. M. CORSON,
Chatham Run; A. J. CRAIG, Fort Washington; R. J. SAGERSON,
Johnstown; from Plattsburg Barracks, Major C. H. HENNINGER,
Pittsburgh. Evacuation hospital, from Camp Dix, Lieut. L. C. RUMMAGE, Sweet Valley; from Camp Meade, Capt. O. F. BARTHMAIER, Philadelphia; from New York, Capt. R. J. BEHAN, Pitts-
burgh; Lieut. R. P. BATCHELOR, Palmerton. Mobile hospital, from
Camp Devens, Lieut. J. H. WYATT, Fountain Springs; from Camp
Gordon, Lieut. J. W. BURKETT, Moon Run; from Fort Oglethorpe,
Lieut. J. H. KREIGER, Harrisburg.

To Camp Custer, Mich., from Camp Grant, Lieut. D. THOMAS, New
Kensington.

To Camp Gordon, Ga., base hospital, from Camp Jackson, Major
K. A. EMMERLING, Pittsburgh.

To Camp Greene, N. C., base hospital, from Fort Oglethorpe, Capts.
W. B. DENSLOW, Pittsburgh; F. S. ULLOM, Waynesburg; Lieut.
T. J. McGURL, Minersville.

To Camp Hancock, Ga., base hospital, for instruction, from Fort
Oglethorpe, Lieut. A. H. JAHN, Pittsburgh.

To Camp McClellan, Ala., from Camp Upton, Major H. P. BROWN,
Philadelphia. Base hospital, from Fort Oglethorpe, Capt. G. F.
TUCKER, Pittsburgh.

To Camp Meade, Md., as orthopedic surgeon, from Camp Beauregard, Lieut. T. S. MEBANE, Wilkes-Barre. Base hospital, from Fort Oglethorpe, Lieuts. C. C. KEMBLE, Erie; B. BOROW, Philadelphia; J. K [illegible] Pittsburgh; L. B. ROBERTS, Scranton. [illegible] from Washington, Capt. R. R. DECKER, Base [illegible] ital, from Camp Beauregard, Lieut. J. Orbis [illegible] CAMP, Foxburg.

To Camp Sevier, S. C., base hospital, from Camp Custer, Capt. G. M. BOYD, Philadelphia.

To Camp Sheridan, Ala., base hospital, from Fort Oglethorpe, Lieut. J. C. HARTMAN, Philadelphia.

To Camp Travis, Texas, base hospital, from Fort Oglethorpe, Lieut. J. L. RICHARDS, Philadelphia.

To Camp Upton, N. Y., to examine the command for nervous and mental diseases, from Ann Arbor, Lieut. J. M. MIRMAN, Philadelphia.

To Camp Wadsworth, S. C., base hospital, from Camp Abraham Eustis, Lieut. J. M. STEWART, Marion Center; from Fort Oglethorpe, Lieuts. J. J. SWEENEY, Heckscherville; C. W. RICE, Northumberland.

To Camp Wheeler, Ga., base hospital, from Fort Oglethorpe, Lieut. T. H. HARTER, East Brady.

To Cape May, N. J., from New York, Lieut. R. C. BUERKI, Philadelphia.

To Dansville, N. Y., from Ann Arbor, Lieut. J. A. MERIWETHER, Philadelphia; from Syracuse, Lieut. J. E. DWYER, Polk.

To Fort Bayard, N. M., as instructor, from Camp Fremont, Major R. BEW, Gettysburg.

To Fort Benjamin Harrison, from Detroit, Capt. A. B. SHATTO, York.

To Fort McHenry, Md., from Richmond, Va., Major G. C. BOUGHTON, Erie.

To Fort McPherson, Ga., for instruction, from Rockefeller Institute, Capt. H. C. UPDEGRAFF, Pittsburgh.

To F [illegible] n hospital, from Camp Hancock, Capt. W. W. [illegible] Lieuts. W. H. KELSEA, East Brady; R. W. [illegible] R. B. McCAY, Sunbury; from Camp Lee, Li [illegible] Philadelphia. For instruction, Lieut. K. I. KURZ, Philadelphia; from Saltville, Va., Capt. C. H. CLOUD, Philadelphia.

To Fort Sill, Okla., base hospital, from Fort Oglethorpe, Capt. E. L. ERHARD, Glassport.

To Hoboken, N. J., from New Haven, Capt. H. K. CAREY, Philadelphia. Evacuation hospital, from Camp Dix, Lieut. W. E. GARDNER, Pittsburgh.

To Lakewood, N. J., Lieut. J. M. ODELL, Philadelphia.

To Madison Barracks, N. Y., from Ann Arbor, Lieut. W. L. HAIR, Roaring Springs; from Camp Abraham Eustis, Lieut. A. R. ROZPLOCH, Chester.

To Mineola, N. Y., Hazelhurst Field, for instruction, Capt. W. MARSHALL, [illegible]

To New Y [illegible], for instruction, from Washington, Lieut. [illegible]

To Walter [illegible] *C.*, from Boston, Lieut. J. L. LIVINGOOD, Philadelphia.

Philippine Islands

To New Haven, Conn., Yale Army Laboratory School, from San Francisco, Major H. G. MAUL, Manila.

Rhode Island

To Camp Crane, Pa., evacuation hospital, from Camp Meade, Lieut. F. A. COUGHLIN, Providence.

To Camp Wadsworth, S. C., base hospital, from Fort Oglethorpe, Lieut. W. W. STREET, Providence.

To Fort Oglethorpe, evacuation hospital, from Camp Sevier, Major G. W. GARDNER, Providence.

South Carolina

To Camp Joseph E. Johnston, Fla., from Camp Wadsworth, Lieut. W. A. BROWN, Georgetown.

To Madison Barracks, N. Y., from Fort Oglethorpe, Capt. M. CROOK, Spartanburg.

South Dakota

To Camp Crane, Pa., from Camp Dodge, Lieut. R. G. STEVENS, Sioux City; from Camp Grant, Lieut. B. H. SPRAGUE, Huron.

To Camp Dix, N. J., base hospital, from Camp Crane, Capt. W. D. FARRELL, Aberdeen.

To Camp Shelby, Miss., base hospital, from Fort Oglethorpe, Lieut. F. I. PUTMAN, Sioux City.

To Rochester, Minn., Mayo Clinic, for instruction, and on completion *to Camp Grant, Ill.*, base hospital, for instruction, from Camp Cody, Capt. R. W. MULLEN, Florence.

Tennessee

To Columbus Barracks, Ohio, from Ann Arbor, Lieut. J. P. SCHELL, Nashville.

To Fort McPherson, Ga., from Ann Arbor, Lieut. P. J. TRENTZSCH, Rives.

To Hoboken, N. J., base hospital, from Camp Dix, Capt. S. MEEKER, Memphis.

The following order has been revoked: *To Fort Oglethorpe* for instruction, Capt. J. OVERTON, Nashville.

Texas

To Azalea, N. C., from Camp Bowie, Capt. J. W. HALE, Waco.

To Camp Beauregard, La., from Camp Travis, Capt. A. M. FREELS, Denison.

To Camp Bowie, Texas, base hospital, Lieut. T. A. DICKSON, Houston.

To Camp Crane, Pa., from Camp A. A. Humphreys, Capt. W. P. CONNALLY, McGregor; from Camp Beauregard, Capt. H. M. LANHAM, Waco; from Camp Gordon, Capt. D. A. MANN, Beaumont; from Camp Pike, Lieut. W. G. TENERY, Waxahachie; from Camp Sheridan, Capt. A. M. McELHANNON, Sherman; from Syracuse, Capt. E. B. KENNER, Galveston. Base hospital, from Fort Oglethorpe, Lieuts. G. G. CASTLEBERRY, Post; I. E. COLGIN, Waco. Evacuation hospital, from Fort Oglethorpe, Lieuts. F. B. SEWALL, Marlin; D. M. STONE, San Antonio. Mobile hospital, from Army Medical School, Capt. E. V. POWELL, Fort Worth.

To Camp McClellan, Ala., base hospital, from Fort Oglethorpe, Lieut. J. O. ROGERS, Red Oak.

To Camp Travis, Texas, from Camp McClellan, Lieut. T. P. LYNCH, Coleman.

To Camp Upton, N. Y., to examine the command for nervous and mental diseases, from Ann Arbor, Lieut. R. A. THARP, Austin.

To Charleston, S. C., from Camp Sevier, Capt. C. B. McGLUMPHY, Galveston.

To Colonia, N. J., from Boston, Lieut. O. N. MAYO, Belton.

To Fort Bliss, Texas, base hospital, from Fort Sam Houston, Lieut. T. C. TERRELL, Fort Worth.

To Fort Oglethorpe, base hospital, from Camp MacArthur, Lieut. R. M. FANCHER, Houston. Evacuation hospital, from Camp Logan, Lieut. W. TRAYLOR, San Antonio.

To Fort Sam Houston, Texas, from Camp Travis, Lieut. F. A. ALLIN, San Antonio.

To Lakewood, N. J., from Baltimore, Lieut. M. H. GLOVER, Wichita Falls.

To Madison Barracks, N. Y., from Ann Arbor, Lieut. C. W. STEVENSON, Lorain.

To Mineola, N. Y., Hazelhurst Field, from Camp Meade, Capt. L. C. G. BUCHANAN, Big Springs.

To Rantoul, Ill., Chanute Field, from Fort Oglethorpe, Capt. H. H. ALLDREDGE, Higgins.

Utah

To Fort Oglethorpe for instruction, Lieut. G. W. GOINS, Tocele.

To Hoboken, N. J., from Fort McHenry, Major S. C. BALDWIN, Salt Lake City.

Vermont

To Camp Crane, Pa., from Camp Shelby, Capt. J. P. GIFFORD, Randolph.

To Camp Logan, Texas, base hospital, for instruction, from Fort Oglethorpe, Lieut. J. R. GRIMES, Montpelier.

To Camp McClellan, Ala., to examine the command for nervous and mental diseases, Capt. E. O. CROSSMAN, Burlington.

Virginia

To Azalea, N. C., from New Haven, Lieut. W. E. BROWN, Salem.

To Camp Cody, N. M., as orthopedic surgeon, from Boston, Capt. L. N. HARRIS, Harrisonburg.

To Hoboken, N. J., base hospital, from Camp Wheeler, Capt. J. W. WHITE, Norfolk.

To Middletown, Pa., from Camp Dix, Capt. G. H. THOMAS, Staunton.

To Camp Crane, Pa., from Camp Lewis, Capt. E. L. INGERSOLL, Spokane. Base hospital, from Camp Custer, Capt. J. M. HENDERSON, Seattle; from Camp Lewis, Major F. P. GARDNER, Seattle; Lieut. J. H. CRAMPTON, Spokane.

To Washington, D. C., from Vancouver Barracks, Lieut.-Col. J. W. SHERWOOD.

West Virginia

To Camp Crane, Pa., from Camp Travis, Lieut. O. H. GRIFFITH, Parkersburg; from Fort Oglethorpe, Lieut. B. H. SWINT, Charleston. Base hospital, from Camp Custer, Major J. E. CANNADAY, Charlestown. Evacuation hospital, from Camp Lee, Capt. E. A. HILDRETH, Wheeling; from Fort Myer, Capt. J. B. KIRK, Bluefield.

To Camp Dix, N. J., base hospital, from New York, Major L. C. COVINGTON, Charleston.

To Camp Wheeler, Ga., base hospital, from Fort Oglethorpe, Lieut. W. A. NOBLE, Welch.

To Fort Oglethorpe; base hospital, from Camp Bowie, Lieut. E. B. HENSON, Charleston.

To Mineola, N. Y., Hazelhurst Field, from Riverside, Calif., Lieut. H. R. PARKER, Williamson.

Wisconsin

To Camp Cody, N. M., base hospital, from Fort Bayard, Capt. L. J. BENNETT, Port Atkinson.

To Camp Crane, Pa., from Camp Joseph E. Johnston, Capt. G. E. THOMPSON, Kenosha. Base hospital, from Camp Custer, Capt. J. G. TAYLOR, Milwaukee.

To Camp Gordon, Ga., base hospital, from Fort Oglethorpe, Capt. O. H. FOERSTER, Milwaukee.

To Camp Grant, Ill., evacuation hospital, from Camp Custer, Lieut. H. McCABE, Milwaukee.

To Camp McClellan, Ala., from Fort Riley, Lieut. P. M. ROSS, Milwaukee. Base hospital, from Fort Oglethorpe, Capt. N. ANDREWS, Oshkosh.

To Camp Meade, Md., base hospital, from Fort Oglethorpe, Lieut. F. M. ROHOW, Ashland.

To Camp Wadsworth, S. C., base hospital, from Fort Oglethorpe, Capt. A. O. SANDERS, Superior.

To Fort Benjamin Harrison, base hospital, from Camp Pike, Capt. E. F. BAUR, Milwaukee.

To Fort Oglethorpe, evacuation hospital, from Camp Zachary Taylor, Capt. C. U. SENN, Ripon.

To Mineola, N. Y., Hazelhurst Field, for instruction, from Dallas, Capt. C. W. ANDREWS, Waupaca.

To Pittsburgh, Pa., Carnegie Institute, and University of Pittsburgh, from Camp Meade, Capt. H. A. RICE, Gays Mills.

To San Antonio, Texas, Brooks Field, from San Diego, Capt. F. W. POPE, Racine.

To Washington, D. C., Surgeon-General's Office, for instruction, from Fort Riley, Capt. T. L. HARRINGTON, Milwaukee.

ORDERS TO OFFICERS OF THE UNITED STATES PUBLIC HEALTH SERVICE

Passed Asst. Surg. J. H. LINSON, relieved at Boston, Mass., proceed to Washington for duty in the division of venereal diseases.

Asst. Surg. C. J. McDEVITT, report to Surgeon W. C. Billings for duty in suppression of influenza.

Asst. Surg. G. C. LAKE, proceed to Chicago, Ill., and other necessary points for observation in regard to vaccine against influenza and pneumonia.

Asst. Surg. CHARLES ARMSTRONG, proceed to Albany, N. Y., for duty in measures for the control of influenza.

Asst. Surg. R. C. WILLIAMS, relieved from further duty on Bureau of Mines car. *Proceed to Chicago, Ill.*, for duty in the control of influenza.

Prof. E. B. PHELPS, proceed to Chicago, Ill., and other necessary points in the vicinity of the Chicago Drainage Canal to assist in making plans for sewage disposal.

Acting Asst. Surg., ORLANDO DUCKER, proceed to Richmond, Va., for the duty in control of influenza.

Acting Asst. Surg. GEORGE HAYS, relieved at Chester, Pa., proceed to Columbia, S. C., for duty in influenza control.

Acting Asst. Surg., WILLIAM RICE, proceed to St. Louis, Mo., for duty at the Marine Hospital.

Dr. CAROLINE ROSENBERG, proceed to Wilmington, Del., for duty in influenza control.

Acting Asst. Surg. E. W. SCOTT, proceed to Columbus, Ohio, and other necessary places for duty in influenza control.

Acting Asst. Surg., FRANKLIN F. WALTERS, proceed to Newberry, S. C., for duty in influenza control.

Acting Asst. Surg. W. A. WILSON, proceed to necessary places in the State of New Jersey to organize venereal disease relief measures.

Phar. W. G. BEUCLER, proceed to Washington, D. C., for duty in the office of field investigations of industrial sanitation.

Sanitary Engr. A. F. STEVENSON, proceed to Framingham, Mass., for conference in regard to milk pasteurization.

Scientific Asst. GEORGE A. DECELL, proceed to Washington, D. C., for duty in compiling statistics relative to influenza and other communicable diseases.

Scientific Asst. SAMUEL SAUÑDERS, relieved at Brunswick, Ga., proceed to Washington, D. C., for duty in control of influenza.

Regional Field Director G. C. CAREY, proceed to Albany, New York City, Trenton, Wilmington, Baltimore and Washington and other points in the States of New York, New Jersey, Delaware and Maryland for duty in campaign of venereal instruction.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST; SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION, PUBLIC HEALTH, ETC.)

DISTRICT OF COLUMBIA

Inroads of the War on School Medical Inspection Staff.—Soon after the entrance of the United States into the war, Dr. Prentiss Willson and Dr. Albert Ridgely, medical inspectors of schools, entered the Army Medical Service. During the past summer, Dr. John Thomas was commissioned and sent to camp, and during the past few weeks Dr. Joseph A. Murphy, chief medical and sanitary inspector of schools, was ordered to Camp Jackson, S. C., and Dr. H. C. Macatee, to duty at U. S. Naval Dispensary, Washington, D. C.

Curtailment of Medical Society Activities.—The Medical Society of the District of Columbia has long prided itself on maintaining meetings every week from October to May, always with interesting programs and good attendance. The securing of programs has become increasingly difficult owing to the absence of so many active workers now serving in the Army or Navy and to the increasing professional burdens of those physicians who remain. It has been necessary to abandon the meeting altogether during the influenza epidemic because of nonattendance, and it will probably be necessary to hold semimonthly meetings hereafter because of the dearth of scientific material. The society has remitted the dues of all members in active service with the Army and Navy, and in view of this reduction in the society's revenues it will be necessary to reduce the size or frequency of publication of the *Washington Medical Annals.*

Medical Care of Employees of the Navy Department.—A very large part of the increased clerical force of the Navy Department has been secured by the enlistment of both men and women as yeomen. These employees receive the regular Navy pay for their respective ratings and are given subsistence allowance in lieu of quarters and mess privileges. Being enlisted personnel, they are entitled to medical care and thus the Naval Dispensary has become an important adjunct to the Navy Department. The dispensary has recently removed to commodious quarters near Seventeenth Street and New York Avenue N.W., within easy walking distance of the various buildings housing the Navy Department. There are departments for internal medicine, minor surgery, gynecology, ophthalmology and otolaryngology, dentistry, and a very complete pharmacy. Enlisted men requiring hospital care are sent to the Naval Hospital, while enlisted women are sent to the Georgetown University Hospital under a contract arrangement. The dispensary is under the command of Capt. J. B. Dennis, M. C., U. S. Navy.

Influenza Epidemic Abating.—Washington is emerging from the influenza epidemic as from a bad dream. As is the common experience, the last week in September ushered in the disease and the last week in October finds little to do but clear up the wreckage of the storm. The epidemic found the community totally unprepared to cope with it; the depleted medical profession was unable to meet the situation fully and quickly became further depleted by illness of the doctors themselves; four physicians died, Drs. William E. Turton, Thomas Miller, Jr., Thomas B. Kramer, and Thomas S. D. Grasty, all of these having quickly fatal pneumonia. The local hospitals broke down during the first ten days of the epidemic, partly because overcrowded, but mainly because the nursing staffs suffered so severely from the disease. The Medical Society of the District of Columbia last spring realized the situation that an epidemic would create in this city and urged that a temporary hospital for the civilian population be provided; this recommendation being based on the fact that the population of Washington has been suddenly increased by nearly 150,000, mostly war workers, and that the majority of these people are living as lodgers without the most elementary necessaries to cope with an illness. Nothing came of this suggestion, but the present emergency made the need most apparent and the Public Health Service has established a large hospital for the treatment of influenza and this hospital has done a most important work. It is hoped that it may be maintained during the continuance of the war; for its value has already been amply demonstrated. The measures taken to combat the disease were: collaboration between the U. S. Public Health Service, represented by Dr. H. S. Mustard, and the local health department; the declaration of the District of Columbia as a sanitary zone; making influenza a reportable disease and requiring the segregation of persons suffering with it; closing of schools, churches, theaters, and other places of public assemblage; liberal placarding in streets and public buildings and grounds of information and advice regarding the mode of spread of the disease; the establishment of centers under the Public Health Service where immediate medical and nursing assistance could be obtained. In spite of all this the impression is current that the epidemic has simply burnt up all the available susceptible fuel and has passed on to new areas.

GEORGIA

Returns from France.—Major Edward C. Davis, formerly of Atlanta, and organizer of the Emory Unit of the ambulance service, is expected home from France in a short time.

Personal.—Dr. Jarrett W. Palmer, Ailey, was elected president, Dr. Alfred F. White, Flovilla, vice president, and Dr. Charles T. Nolan, Marietta, secretary-treasurer, of the Georgia State Board of Medical Examiners, at its meeting held in Atlanta, October 9.——Dr. Ferdinand N. Ware, Thomson, is reported to be critically ill as a result of a cerebral hemorrhage.

ILLINOIS

Arrest Illegal Practitioner.—Milton A. Chaiken of Joliet was arrested by the Department of Registration and Education of the State of Illinos for writing prescriptions and signing thereto the name of a licensed physician. He was fined $75 and cost on one charge. Six more charges against him are pending.

Chicago

Tuberculosis Institute.—At the meeting of the executive committee of the Chicago Tuberculosis Institute, held October 24, Dr. Herbert W. Gray was unanimously elected attending physician for the Edward Sanatorium, Naperville. Dr. Gray will also examine all applicants for admission to the institution at his office in Chicago.——Dr. Ethan Allen Gray still continues as consultant to the Edward Sanatorium. The Fresh Air Hospital and the Edward Sanatorium have entered into close cooperation, to the great advantage of the patients and institutions.

Fines and Imprisonments.—Judge Edmund Jerecki of the Municipal court, October 23, had arraigned before him four druggists and three physicians for alleged violation of the state medical practice act. "Dr." Jacob Bond is said to have been fined $200 and costs, on the charge of two complaints, and to have been sent to Bridewell on account of inability to pay the fine; "Drs." Julian Portes and Lorenz Girmhuber were said to have been fined each $25 and costs. and four druggists, charged with employing unlicensed men as registered pharmacists, were fined court costs.

INDIANA

Hospital Notes.—Plans are being completed for a hospital in Terre Haute, adjoining the Terre Haute Hospital to accommodate at least 100 patients. It is stated that this building is to be used for the care of invalided soldiers.——The west wing of the old City Hospital, Indianapolis, has been remodeled at a cost of $3,000. This wing will be used for contagious diseases only.——The Methodist Episcopal Hospital, Indianapolis, has placed one of its buildings in use as an influenza hospital.

Personal.—Dr. U. Willard Reed, Topeka, suffered a slight cerebral hemorrhage recently.——Dr. Edwin W. Dyar, Ossain, was operated on in the Lutheran Hospital, Fort Wayne, for appendicitis, October 21, and is reported to be doing well.——Dr. Carl L. Souder, Columbia City, was operated on in the Lutheran Hospital, Fort Wayne, October 19, for sinusitis.——Dr. Joseph N. Jerome has been appointed city health officer of Evansville, to succeed Dr. William E. Barnes, who has entered the military service.——Dr. Edmund C. Hack, Pence, is under treatment at the Lakeview Hospital, Danville.——Dr. Leo W. Roller, North Manchester, has accepted a position as city physician of Cleveland, Ohio.

KANSAS

Personal.—Dr. Alfred F. Yohe, physician at the Federal Penitentiary, Leavenworth, for nearly thirteen years, a member of the federal parole board, has resigned and has been succeeded for the time being by Dr. Jacob L. Everhardy.——Dr. Thomas J. Carter, Wichita, has been elected president of the Friend's Board of Kansas.

MARYLAND

Personal.—Dr. J. Knox Insley of Baltimore, who has been seriously ill with influenza that developed into pneumonia, is reported, the city health commissioner has partially lifted the Mason Knox, Jr., has returned to his home in Guilford, after a year spent in the Children's Bureau of Civilian Relief Work of the American Red Cross.

Volunteers of America Close Hospital.—After successfully conducting an emergency hospital at the headquarters of the Volunteers of America for the treatment of homeless sufferers from influenza and pneumonia, Capt. John Logan has announced that his hospital is closed, after having been in operation eleven days. During that time thirteen patients died, while thirty-five were discharged as cured.

Influenza Ban Lifted.—Owing to the great decrease in the number of deaths from influenza, as well as of new cases reported, the city health commissioner has partially lifted the ban which has been in effect for about two weeks. Unless there is another outbreak of the epidemic, the public schools, private schools, and colleges will be opened by the middle of the week. The ban has been entirely lifted on places of public worship, while it is partially lifted for department stores, theaters and motion picture parlors. The ban on saloons, cafés, retail liquor stores and nonessential assemblages is still existing. According to the official records at the health department, yesterday, there were 115 deaths reported, where influenza and pneumonia were given as the cause. There were also 257 new cases of influenza, as compared with 136 deaths and 304 new cases for a similar period for the day before. The total number of deaths from all causes announced for this period of time was 150 as compared with 171 for the period of twenty-four hours immediately preceding. The conditions throughout the state were reported by Dr. C. Hampson Jones, Baltimore, of the state board of health, as greatly improved and there were signs of an appreciable abatement in the epidemic.

The Baltimore Fund.—The trustees of the Baltimore fund have made a report on the first year's work on this fund, which was founded in April, 1917. During the year it received pledges amounting to $700,054.95, cash total, $323,495.90, and paid out $280,011.32, for free local charity [illegible] Baltimore Chapter of the Red Cross. [illegible] $12,942.47 was paid to the Baltimore [illegible] ross for home service, that is to say, assistance to families of Baltimorians in the Army and Navy. For the work devoted to babies and the Babies' Milk Fund Association, $20,273.16 was appropriated. To the Federated Charities for the relief of family distress, $95,997.12 was expended. The Friendly Inn Association recorded 9,933 "service days" for 710 men, provided 15,401 night lodgings, and 35,133 meals. For restoring a family life to children [illegible] $35,944.16 was appropriated to the Henry Watson Children's Aid Society. The Instructive Visiting Nurse Association expended $10,030.99 of the fund, visited 11,292 new patients, and made a total of 56,939 visits. To the Prisoners' Aid Association $13,991.64 was appropriated. Among other agencies in which the trustees of the Baltimore Fund are interested are the Maryland Tuberculosis Association, the Social Service Corporation, the Boy Scouts of America, Public Athletic League neighborhood work for which $36,138.17 was appropriated. For the problems of mental disorders and of feeblemindedness $3,353.49 was appropriated. For the Mothers' Relief Society, which gives medical care for poor mothers, $2,608.87 was appropriated. The trustees appropriated $2,135.03 to the Travelers' Aid Society. The Alliance of Charitable and Social Agencies, to unify and coordinate efficiency, economy, and cooperation in social work was given $15,692.95.

MINNESOTA

Personal.—Dr. Arthur E. Nichols, St. Paul, medical inspector in the state health department, has been appointed director of school hygiene to succeed Dr. William J. Little.

Southern Minnesota Physicians to Meet.—The annual meeting of the Southern Minnesota Medical Association will be held at Mankato, November 25 and 26, under the presidency of Dr. E. Starr Judd, Rochester.

Memorial to Wesbrook.—The faculty of the Medical School of the University of Minnesota, Minneapolis, has adopted a memorial to its former dean, Frank Fairchild Wesbrook, M.A., C.N., M.D., whose death was noted in The Journal of October 26, page 1428, bearing testimony to his qualities as a scientist in medicine, as a leader and administrative officer, and as a councilor and friend.

NEW YORK

New York City

Personal.—Dr. George H. Chaffee, who practiced medicine for many years in Brooklyn, has removed to Binghamton.——Mr. Robert E. Cusack has brought suit in the supreme court against Dr. Robert T. Morris for $250,000 damages, charging him with having removed surreptitiously a part of his body during an operation and engrafted the same on the body of an unnamed person. Dr. Morris declares that he operated on Cusack skilfully and successfully for a double hernia and that the allegations are without foundation.

Commission to Study Influenza.—Governor Whitman has appointed a commission to study and report on the cause prevention and treatment of influenza. Among those asked to serve are the Surgeon-Generals of the Army, Navy and Public Health Service; Dr. Rufus I. Cole of the Rockefeller Institute; Dr. Walter B. James, president of the New York Academy of Medicine; Dr. Hermann M. Biggs, New York State Commissioner of Health, and Dr. William H. Park, director of the research laboratories of the New York City Department of Health.

Influenza on the Decrease.—Reports from the health department, October 25, show that the epidemic of influenza is on the wane. A smaller number of cases are being reported and the number of discharges from the hospitals is exceeding the number of admissions. Since the health department began recording epidemic figures about 90,000 cases of influenza have been reported, with 5,984 deaths therefrom. The figures tabulated by the New York State Department of Health show the total number of deaths in the state, exclusive of New York City, for the first twenty-two days of October, as a result of the influenza epidemic, were 4,543, of which 3,313 were attributed to influenza and 1,230 to pneumonia. To the above date 96,110 cases of influenza have been reported in the state outside of the city of New York.

PENNSYLVANIA

Hospital News.—The Ellwood City Hospital, August 12, dedicated its new home which cost upward of $35,000.——The physicians of Bethlehem have purchased the Weiss property on East Broad Street for $26,500, and will alter the residence for hospital purposes.

Personal.—Dr. C. M. Richert of Millersville and Harrisburg has been appointed associate chief medical inspector of the state board of health.——Dr. Walter F. Donaldson, Pittsburgh, has been elected treasurer and also director of the Allegheny County Medical Society, to fill the unexpired term of Dr. William C. Bryant, who has entered the service

Influenza in Coal Regions.—Figures from the Anthracite Bureau of Information indicate that there is danger that the 1,000,000 tons gain in the mining of hard coal so far this year over the output of last year may be lost if the epidemic of influenza is not quickly checked. No section of the country has been so hard hit by the epidemic as the southern anthracite district, embracing Schuylkill and Northumberland counties. Reports show that since the epidemic broke out, October 4, there have been 2,200 deaths in these counties, one in every 145 of population. In Schuylkill County there are more than 1,500 orphans and 500 in Northumberland. As a result of the disease in Minersville, with a population of 6,000, there are 200 orphans. A peculiar feature is the fact that the epidemic was particularly virulent in the southern anthracite fields while the northern was not nearly so badly affected. In Wilkes-Barre there have been only fifty deaths. In Hazleton, October 26, there were 1,500 cases in the town; and 2,500 in the surrounding country. In Scranton up to October 25 from the beginning of the epidemic, October 5, there have been 4,250 cases reported, with 239 deaths. A detachment of more than 100 medical officers from Camp Crane, Allentown, have been in the region for ten days but now are gradually being withdrawn. According to reports to the state health department, October 26, the epidemic of influenza was rapidly growing worse in the southern bituminous coal fields and in Somerset County.

Philadelphia

Personal.—Drs. James M. Anders and L. Webster Fox have been elected trustees of the Polyclinic Hospital.——Dr. Charles J. Hatfield, who has served for the last four years as executive secretary of the National Tuberculosis Association, has been made managing director.——Dr. Luther C. Peter was elected secretary of the American Academy of Ophthalmology and Oto-Laryngology at its meeting in Denver, August 5 and 6.

Quarantine Lifted.—Dr. Benjamin F. Royer, Harrisburg, acting commissioner of health, telegraphed Dr. Wilmer Krusen, director of health and charities, that the ban might be entirely lifted, October 30. Although church services are to be permitted, no public funerals will be permitted, in fact the same regulations must govern funerals as are observed in cases where death has resulted from diphtheria or scarlet fever. The deaths from influenza and kindred diseases for the last six weeks have been as follows:

Week ended	Influenza	Pneumonia	Broncho-pneumonia
September 20	8	17	15
September 27	73	44	32
October 4	399	225	78
October 11	1,797	687	251
October 18	2,953	1,199	446
October 25	1,839	776	406
Totals	7,069	2,948	1,228

RHODE ISLAND

Fiske Fund Prize Essay.—At the annual meeting of the Rhode Island Medical Society, June 6, the trustees of the Fiske Fund proposed the following subject for the prize essay for 1919: "Recent Classification and Treatment of Pneumonia." The prize for the best essay is $200. The conditions of the competition are that each competitor must forward to the secretary of the trustees, on or before May 1 of the year of the competition, a copy of his dissertation with a motto, accompanied by a sealed letter with the same motto on the outside and the name of the competitor on the inside; the successful competitor must transfer to the trustees all his right, title and interest in the essay for the use and benefit of the Fiske Fund before he will receive the amount of the premium. The unsuccessful competitors may have their essays returned. The trustees are Drs. Gardner T. Swarts, John M. Peters and Jesse E. Mowry, all of Providence. Dr. Peters is secretary.

VERMONT

Personal.—Dr. Daniel J. Nolan, Burlington, who has been seriously ill with pneumonia, is reported to be convalescent.

Poliomyelitis.—The bulletin of the Vermont State Board of Health for the quarter ending September, 1918, is devoted almost wholly to a complete analysis of poliomyelitis as it occurred in the state in 1916 and 1917. The article is by the late Dr. Charles S. Caverly, Rutland, president of the state board and contains much valuable information in regard to the disease, the manner in which it was handled and the results.

CANADA

New Hospital.—The Salvation Army has purchased a private residence in Windsor, Ont., and is converting it into a general hospital. A campaign is being conducted to raise $32,000.

Personal.—Lieut.-Col. Harold C. Parsons, Toronto, who returned from overseas a short time ago, is now working with the committee inspecting Canadian military hospitals.——The following Toronto physicians have been assigned to duty at Basingstoke Hospital, England: Drs. Oliver R. Maybee, Norman T. MacLaurin, Charles W. Clark, Hanna and Robinson.——Col. John W. S. McCullough, Toronto, chief medical officer of health, Ontario, was requested to take charge of the medical unit to Serbia, but the Ontario government considered his services of more worth to the province in his present capacity.——Capt. Leroy J. Snider, Toronto, who was in Mesopotamia for some time, has been reported wounded.

GENERAL

Malaria Meeting Postponed.—On account of the prevailing epidemic of influenza the meeting of the national malaria committee at Asheville, N. C., November 11, has been indefinitely postponed.

Public Health Officers' Reserve.—Legislation authorizing the establishment of an officers' reserve in the United States Public Health Service, was completed, October 21, by the adoption of the conference report to the Senate. The bill is now in the President's hands.

New Tri-State Officers.—At the forty-fifth annual meeting of the Northern Tri-State Medical Association held in Fremont, Ohio, October 8, the following officers were elected: Dr. George V. Brown, Detroit, president; Dr. Charles C. Terry, South Bend, Ind., vice president; Dr. George W. Spohn, Elkhart, Ind., secretary, and Dr. Joseph A. Weitz, Montpelier, Ohio, treasurer.

Influenza.—From most sections of the country by the end of the month the epidemic was reported to be on the wane. In some communities more or less distant from the large centers of population and off the main lines of travel the disease was only beginning to show itself, or had not yet reached its height. It was present, however, in every state in the Union, as confirmed by reports to the Public Health Service.

Association Meeting Postponed.—A letter from the president, chairman of the council and business manager of the Southern Medical Association, under date of October 15, announces postponement for a year, of the twelfth annual meeting of the Southern Medical Association, which was to have been held at Asheville, N. C., November 11 to 14, on account of the widespread epidemic of influenza. The papers which were to have been read will be published during the coming year in the *Southern Medical Journal.*

Anesthetists Hold Meeting.—At the annual meeting of the Inter-State Association of Anesthetists held in Indianapolis, September 26, the following officers were elected: chairman, Dr. Jacob J. Buettner, Syracuse, N. Y.; vice chairman, Dr. William J. Jones, Columbus, Ohio; secretary-treasurer, Dr. F. Hoeffer McMechan, Cincinnati, and directors, Drs. Isabella C. Herb, Chicago; B. H. Harms, Omaha; Henry F. Becker, Danville, Ill.; George B. Winter, St. Louis; Louis H. Maxson, Seattle, and W. F. Dramburg, Milwaukee.

Railway Surgeons Elect Officers.—At the annual meeting of the American Association of Railway Surgeons, held in Chicago, October 16 to 18, the following officers were elected: president, Dr. John P. Kaster, chief surgeon of the Santa Fe Railway, Topeka, Kan.; vice presidents, Drs. James M. Miller, Villa Grove, Ill.; Charles P. Frantz, Burlington, Iowa, and John P. Lord, Omaha; secretary, Dr. Louis J. Mitchell, Chicago (reelected); treasurer, Dr. Henry B. Jennings, Council Bluffs, Iowa, and executive committee, Dr. Clarence W. Hopkins and Guy G. Dowdall, both of Chicago.

Refilling of Narcotic Prescriptions Temporarily Permitted.—Owing to the epidemic of influenza the provisions of Article 11 of Regulations No. 35 prohibiting the refilling of narcotic prescriptions have been modified as follows: *Prescriptions calling for morphin, codein or heroin, which are written by registered practitioners for patients suffering from Spanish influenza and any pulmonary or bronchial affections, may, until further notice, be refilled, provided that at the time of issuance by physicians instructions are noted in the body of such prescriptions, "Repeat if necessary," and the druggist filling and refilling the same shall note thereon each and every date on which such prescription is refilled.*

New Officers of Southwestern Association.—The thirteenth annual meeting of the Medical Association of the Southwest was held in Dallas, October 14 to 17. Oklahoma City was selected as the next place of meeting and the following officers were elected: president, Dr. Matthew M. Smith, Dallas; vice presidents, Drs. Robert L. von Trebra, Chetopa, Kan.; Oscar B. Hall, Warrensburg, Mo.; Frank W. Jelks, Hot Springs, Ark.; Foster K. Camp, Oklahoma City, and secretary-treasurer, Dr. Fred H. Clark, El Reno, Okla. (reelected). It was decided hereafter to publish the journal of the association in Oklahoma City instead of El Reno, and Dr. Everett S. Lain, Oklahoma City, was selected as the editor-in-chief, pending the return of Dr. Fred H. Clark, who is now in the military service.

FOREIGN

School Inspection.—The minister of public instruction in Spain has obtained from the king a decree establishing medical inspection of schools in Madrid and Barcelona.

Scarcity of Camphor.—A notice in the *Correspondenz-Blatt* warns that the wholesale dealers in Switzerland have long been entirely out of camphor, and that it behooves all to save what supplies are on hand for indispensable uses, as in camphorated oil, and not waste it in liniments, etc. A similar warning has been sent out by the national public health service in Norway, specifying bismuth as well as camphor as requiring the extremest economy in use.

Deaths in the Profession Abroad.—Dr. **Paul Lucas-Championnière** of Paris, director of the *Journal de médecine et de chirurgie pratiques.*——Dr. **M. Holmboe**, for twenty-five years chief of the national public health service of Norway, aged 66. He has published much on scientific and administration topics, and was the leader in the movement which resulted in 1900 in the notification of tuberculosis. Also in the transformation of the civilian medical service, which culminated in the law of 1912.——The *Siglo Medico* mentions the death of Prof. **G. Gaffky** of Berlin, who succeeded Koch as director of the Institute for Infectious Diseases, aged 68.

SOUTH AND CENTRAL AMERICA, MEXICO AND WEST INDIES

For the Prevention of Blindness.—Following the meeting of the Fifth National Medical Congress in Mexico, a National Committee for the Prevention of Blindness has been founded, with Dr. J. Joaguin Izquerdo as secretary.

Influenza in Cuba.—The *Revista de Medicina y Cirugia* of Havana confirms the news item that the Spanish steamer *Alfonso XII* had 800 cases of pneumonic influenza on board, and there had been twenty-six deaths when it arrived at Havana. The epidemic has spread over the entire island, and there have been so many deaths, especially at Camagüey, that the people are much alarmed.

Reciprocity Between Peru and Uruguay.—The *Reforma Medica* of Lima gives the text of the diplomatic agreement between Uruguay and Peru for reciprocity in respect to academic credits in the liberal professions between the two republics. Not only the higher institutions of learning but the preparatory schools are thus enabled to receive students from the corresponding schools of the other country. The students are to matriculate and pay the same and have the same facilities for laboratory and similar work as the native students in each of the two states. The *Reforma* hails the new convention as "another link in the chain uniting the continent in intellectual Americanism." The reciprocity agreement is to remain in force for a year after either one of the contracting parties expresses a desire to withdraw. It is signed by the two plenipotentiaries appointed by the presidents of the two republics for the purpose, and is to be ratified by the respective governments.

CORRECTION

No Infantile Paralysis in Alfred, N. Y.—We are informed by Capt. D. C. Main, M. C., that the item which appeared under "Medical News" in The Journal of October 26, stating that seventy-seven mild cases of infantile paralysis had appeared in Alfred was incorrect. The newspaper item from which this note was taken probably referred to some mild cases of influenza. Alfred is the site of Alfred University, New York State School of Agriculture. This school has been chosen for a corps of the S. A. T. C., and has had a very low infection and death rate in the influenza epidemic. There has been no infantile paralysis in or near the village.

CUBA LETTER

Havana, Oct. 15, 1918.

The Epidemic of Influenza

The Department of Sanitation has been forced to take steps against the epidemic of influenza that has so rapidly spread throughout the republic. We have not, as yet, accurate statistics as to how many cases have occurred in the island, but many thousands have been reported. In Camagüey, where the epidemic seems to be most severe, 1,200 cases are known to exist at present and many have died of pneumonia; physicians and nurses have been sent from Havana to help the physicians of Camagüey and to establish prophylactic measures; all theaters have been closed, all public gatherings forbidden, and confinement of cases has been declared obligatory.

The Society of Clinical Studies

The Sociedad de Estudios Clinicos, September 30, elected new officers for the year 1918-1919. Dr. J. A. Presno was reelected chairman and Dr. L. R. Molina was reelected secretary.

The Medical Press Association

The Asociación de la Prensa Medica de Cuba elected new officers at the September meeting. Drs. J. F. Arteaga and J. B. Pons were elected president and secretary, respectively.

New Medical Journal

Dr. Matias Duque is the editor of the new monthly, *Medicina Cubana,* published in Havana and devoted to general practice.

Personal

Dr. R. P. Vento has been appointed professor of physiology at the University of Havana.

Dr. R. Menocal has been commissioned by the government to represent Cuba in the Congress of American Physicians and Surgeons.

BUENOS AIRES LETTER

Buenos Aires, Sept. 6, 1918.

Typhus in Northern Argentina

The commissions sent by the Public Health Service to northern districts have established the presence of typhus in several parts of the provinces of Salta and Jujuy, in the extreme north of the country, close to the border of Bolivia. It has been ascertained that the disease has been endemic there for some time, but in a milder form than at present. This endemic seems to be restricted to the poorest and most remote mountain regions of those provinces, small villages with scarcely any communication with the cities.

A number of villages were found affected by the endemo-epidemic; at Molinos, for example, with 200 inhabitants, 116 were found sick with typhus and 17 had died. It is believed that the low mortality, which averages from 10 to 20 per cent., is due to a relative immunization from previous attacks, but it is possible that the virulence is attenuated. Research is under way with guinea-pigs, and an antiserum is being prepared. It is almost certain that the disease will remain localized as the means of communication with more populous centers are so restricted. The governor of Jujuy has appealed for aid to the national government, which has promised to send a barracks hospital with personnel and equipment.

South American Conference on Hygiene, Microbiology and Pathology

In October the second conference of this kind is to convene at Rio de Janeiro. Drs. Miguel Couto and Carlos Chagas are to preside. The microbiologists and pathologists of the whole of South America have been invited to take part. The Argentine Departamento Nacional de Higiene is to send a delegation which will include Drs. Vidal, Cazes Itigoyen, Kraus, Carbonell, Roffo, Houssay and Sordelli. At the same time as this conference, is to be held the eight Brazilian Medical Congress to which several Argentine physicians have been invited, among others, Drs. A. Alfaro, Houssay and Mazza.

Sugar Treatment of Tuberculosis

The research in this line by the Italian, Professor Lo Monaco, has attracted much attention on account of the wide publicity given to it by the lay press. Many physicians have been giving a trial to this method of treating tuberculosis with hypertonic solutions of sugar. They have tried it also in whooping cough. The results have not been published as yet, but it may be announced in advance that, in whooping cough, no success has been realized. In respect to tuberculosis, the best result achieved has been a reduction in the amount of expectoration, and this result has been frequently realized.

University Notes

Dr. J. L. Llambias, *profesor suplente* of pathologic anatomy, has been appointed regular professor of this branch of study in the medical department of the University of Buenos Aires. This appointment has aroused some discussion as he is the *intendente municipal* of the city, and although second in the *terna* was yet nominated by the chief executive, as the universities are state institutions.

The vacancies left by the death of Dr. Ayerza and the retirement of Dr. Molina, have to be filled by the chief executive.

The Facultad de Medicina has proposed for the chair of clinical medicine, Dr. M. Castex as the first choice, Dr. J. J. Viton as the second, and Dr. R. Bullrich as the third choice. For the chair of obstetrics, the choice is, first, Dr. A. Enriquez; second, Dr. P. Ramos, and third, Dr. Tronge.

The Academia de Medicina has opened the lists to fill a vacancy in the section of clinical medicine and one in the surgical section.

LONDON LETTER

London, Oct. 3, 1918.

Physicians in Parliament

It is recognized that our social fabric will be profoundly modified after the war, which will leave nothing the same as it was before. As has been explained in previous letters, the medical profession is looking forward to considerable changes, among which is the establishment of a ministry of health. The need of representation of the profession in Parliament is also felt. A crowded meeting has been held in London, with Sir Henry Morris, president of the Royal Society of Medicine, in the chair, to elect an executive committee to select suitable members of the profession willing to stand as candidates for Parliament. Sir Henry Morris pointed out the great attention now given to public health questions in Parliament and the anomaly that such matters as the endowment of pathologic research should be entirely in the hands of lawyers, shipowners, brewers and other politicians with no medical knowledge. Dr. Addison, minister of reconstruction, moved the resolution. It may be pointed out that he is the only member of the medical profession who ever attained the rank of cabinet minister. Before he entered politics he was not a practicing physician but a lecturer on anatomy. He moved that "in the interests of the national health it is essential that the considered views of the medical profession should be voiced by representative medical men in the House of Commons." He said that there was a wealth of opportunity for advice open to men of the right type and training in matters affecting the homes of the people. In these matters there would be a growing need for the assistance of men who had had the advantage of medical knowledge and practice. The war had revealed what great things could be done in the prevention of sickness and injuries. If medical science had not progressed since the days of the South African War we might by now have had a million or more cases of typhoid, instead of a mere handful. But far beyond those things we found, increasingly, that a similar guidance, gathering continually the results of experience and research, was needed with regard to the events of daily life. The prime minister had said the other day that we could not expect to run an A 1 empire on a C 3 population (referring to the extreme classes in the grading of recruits for the army). It would be true to add that we could not expect to get an A 1 population out of C 3 homes, habits, workplaces or conditions. As a first step it was necessary to bring together the assortment of different departmental responsibilities in health matters, and to secure that the thinking out and development of a systematic health policy, commensurate with urgent national needs, should be made the duty and responsibility of a definite body of men. We should and must be the victims of sporadic disjointed, and often conflicting effort until this was done. The Ministry of Health would not itself be a health service. It would be its duty to secure the development and administration throughout the country of adequate health service. It was an essential part of the project that there should be connected with the ministry certain consultative councils, of which one must be medical, whose duty it would be to advise on proposals, to make suggestions, and to afford the best advice that it could give or obtain. In the budget of 1914, Mr. Lloyd George had provided $5,000,000 toward improved health services, but the war interrupted the scheme they then had in their minds. Recent experiences would suggest improvements. Developments of adequate health services would need the good will and help of physicians as well as of those familiar with the problems of local government, insurance and other important services, and if the subject was approached in a proper spirit he was confident that they would be obtained. Those who were concerned with the business of government and administration, whether central or local, would have much to learn and would derive much help from such counsel. Physicians would also learn a good deal. The C 3 class and all that it implied meant that the nation's responsibilities could not end with water supply, drainage, the prevention of the spread of infectious diseases, the adulteration of food, and the like. With the advance of knowledge, science and experience, much could be done to safeguard the personal well-being of our people beyond what we had hitherto attempted, and in devoting its mind to this purpose he believed that the medical profession had a great duty and an unexampled opportunity before it.

The Medical Service of the Air Force

A special medical service is being organized for the air force. Two main divisions of the work will be recognized, namely, (*a*) care of the effective personnel, and (*b*) care of the noneffective personnel. The former may be considered to represent the hygiene and preventive side of the work and to include such special subjects as selection and care of the flying personnel, maintenance and improvement of the physical efficiency of all ranks, sanitation, etc. The latter represents the curative side of the work, and certain subdivisions that air force experience has shown to be necessary will be recognized, namely, neurology, surgery of the eye, throat, nose and ear, and plastic surgery, etc., in addition to general medicine, surgery and pathology. Subject to the exigencies of the service, a medical officer will be selected for and eventually allocated to work in the subdivision for which his ability best suits him. Since, however, the success of any special work in the air force will depend on a sound knowledge of the conditions of life of the effective personnel, medical officers will not be earmarked for one of the special subdivisions of the medical service until selected for the higher or Grade A pay. The system of charge pay as in vogue in the navy and army medical services has been replaced in the air force medical service by a system of special merit pay. An officer once selected for Grade A pay will draw such pay for a probationary period of one year, and if then confirmed, will, except in the case of incompetence or misconduct, continue to draw this pay, however employed, until promoted to the next higher rank, when he will be placed in Grade B until again selected for Grade A.

Marriages

Asst. Surg. Henry DeWitt Hubbard, Lieutenant (Junior Grade), U. S. Navy, San Jose, Calif., on duty at the U. S. Naval Hospital, Mare Island, Calif., to Miss Cecil Wright of Huntington Park, Calif., at Pleasanton, Calif., recently.

Lieut. Edward Buckman, M. C., U. S. Army, Chicago, on duty with the Eighty-Fifth Division, Camp Custer, Mich., and now overseas, to Miss Alfreda Hartenstein of Vicksburg, Miss., at Battle Creek, Mich., recently.

Asst. Surg. George Loughlin Tully, Lieutenant, U. S. N. R. F., Boston, on duty at U. S. Naval Station, Newport, R. I., to Miss Mary Kathleen McCarthy of Newton, Mass., October 12.

Lieut. Malcolm Kinmonth Smith, M. C., U. S. Army, New York City, on duty at Fort Oglethorpe, Ga., to Mrs. Alice Boutell Ladd of Washington, D. C., recently.

Lieut. Richard Roy Turnbull Furlong, M. C., U. S. Army, New York City, to Miss Beral M. Hadley of Nova Scotia, at New York City, October 17.

George G. Reinle to Miss Evelyn A. Kane, both of Oakland, Calif., at Camp Kearney, Calif., September 25.

William D. Snively, Rock Island, Ill., to Miss Emma G. Butler of Washington, D. C., September 12.

Willis Townsend Hinman to Miss Hazel Vance, both of Moline, Ill., September 24.

Edwin Cornne Hoff, Detroit, to Miss Helen Parlette of Carey, Ohio, October 19.

Deaths

Major Alfred Reginald Allen, Infantry, U. S. Army, Philadelphia; University of Pennsylvania, Philadelphia, 1898; aged 42; a Fellow of the American Medical Association; a member and from 1909 to 1917 secretary and treasurer of the American Urological Association; twice president of the American Psycho Pathological Association, and president of the Philadelphia Urological Society; and American Association of Pathology and Bacteriology; secretary of the American delegation to the Sixteenth International Congress to Budapest, Hungary, in 1909, and to the Seventeenth International Congress in London, in 1913; lecturer in urological electrotherapeutics; associate in neurology and in neuropathology in his alma mater; who when the United States declared war against Germany entered the line rather than the medical corps, went to the Infantry School of Arms at Fort Sill, Okla., and was commissioned as major, and assigned to duty with the Three Hundred and Fourteenth Infantry; was killed in action in France during the heavy fighting northwest of Verdun, September 30.

Edwin Bradford Cragin, New York City; College of Physicians and Surgeons in the City of New York, 1886; aged 58; a Fellow of the American Medical Association, American Gynecological Society and New York Academy of Medicine; professor of obstetrics and gynecology in his alma mater; attending obstetrician and gynecologist to the Sloan Hospital for Women; consulting gynecologist to the Presbyterian, Roosevelt and Lincoln hospitals, the New York Infirmary for Women and Children and St. Luke's Hospital, Newburgh, N. Y.; author of "Essentials of Gynecology," and "A Text-Book of Obstetrics," and one of the authors of the "American Text-Book of Gynecology"; an obstetrician and gynecologist of high rank; died at his home, October, 21, from pneumonia.

Leo Smith Petersen, New York City; College of Physicians and Surgeons of the City of New York, 1911; aged 31; a member of the Medical Society of the State of New York; attending anesthetist of the German Hospital, and attending surgeon to the German Dispensary; a member of the staff of the Lenox Hill, and Skin and Cancer hospitals; national president of the Chi Zeta Chi Medical Fraternity; at one time captain in command of the First Field Ambulance, N. Y. N. G., on the Mexican border; died in the Lenox Hill Hospital, New York City, October 22, from pneumonia.

Ernest George Grey, Baltimore; Johns Hopkins University, Baltimore, 1911; aged 34; a Fellow of the American Medical Association; assistant resident surgeon at the Peter Bent Brigham Hospital, Boston, from 1912 to 1916, and at Johns Hopkins Hospital for two years thereafter; also instructor in surgery in Johns Hopkins University; recently appointed under the Rockefeller Foundation director of the surgical clinic of the Peking (China) Medical School and Hospital; died October 12, at Johns Hopkins Hospital, from pneumonia, following influenza.

Lieut. Argo Montague Foster, M. C., U. S. Army, Kaukauna, Wis.; University of Michigan, Ann Arbor, 1910; aged 33; a Fellow of the American Medical Association; local surgeon of the Chicago and Northwestern System and city health officer of Kaukauna; died, September 2, in the North Shore Hospital, Chicago, from streptococcus infection following an operation on the nose.

Act. Asst. Surg. Francis Sherman Echols, U. S. P. H. S., Washington, D. C.; Bowdoin Medical School, Brunswick and Portland, Me., 1915; aged 36; a Fellow of the American Medical Association; who had served during the early part of the war in Middlesex Hospital, London, England; died in the Walter Reed Emergency Hospital in Washington, D. C., October 15, from pneumonia, following influenza.

Lieut. Admont Halsey Clark, M. C., U. S. Army; Johns Hopkins University, Baltimore, 1915; aged 30; assistant professor of pathology in Johns Hopkins University; resident pathologist to Johns Hopkins Hospital; who had done brilliant experimental work in pneumonia and diabetes; one of the most promising of the younger pathologists of America; died in Johns Hopkins Hospital, October 13, from pneumonia, following influenza.

Charles Huff Davis, Knoxville, Tenn.; Lincoln Memorial University, Knoxville, Tenn., 1898; aged 53; a Fellow of the American Medical Association, and American Laryngological Association; vice president of the Tennessee State Medical Association, and once president of the Knox County Medical Society; a specialist on diseases of the eye, ear, nose and throat; died at his home, October 21, from pneumonia, following influenza.

Isaac K. Urich, Annville, Pa.; Jefferson Medical College, 1882; aged 55; a Fellow of the American Medical Association; for two terms representative in the state legislature from Lebanon County; secretary-treasurer of the Calcite Quarry Company, Myerstown, Pa.; for twenty years school director of Annville; died at his home, October 14, from bronchial pneumonia.

Died in the Service
IN FRANCE
MAJOR ALFRED R. ALLEN, U. S. A.
1876-1918

Capt. Fred Scates Towle, M. C., U. S. Army; on duty at Colonia, N. J.; Portsmouth, N. H.; George Washington University, Washington, D. C., 1893; aged 54; a Fellow of the American Medical Association, and president of the New Hampshire Medical Society in 1917-1918; surgeon-general of New Hampshire from 1897 to 1899; city physician of Portsmouth, and chairman of the local board of health; assigned to duty with Base Hospital No. 3, Colonia, N. J.; lost his life in a fire which destroyed the officers quarters at that post, October 9.

Robert Coleman Kemp, New York City; College of Physicians and Surgeons in the City of New York, 1889; aged 53; a Fellow of the American Medical Association; professor of gastro-intestinal diseases in Fordham University, New York City; visiting gastro-enterologist to Fordham University Clinic, and consultant in gastro-intestinal diseases to the Manhattan State Hospital; died at his home, October 23, from pneumonia, following influenza.

Capt. Victor Moreau Rice, M. C., U. S. Army, Batavia, N. Y.; University of Buffalo, N. Y., 1904; aged 38; a Fellow of the American Medical Association, and a specialist on roentgenology; on duty with Company 21, M. O. T. C., Camp Greenleaf, Fort Oglethorpe; died in General Hospital No. 14, Fort Oglethorpe, October 13, from pneumonia, following influenza.

Lieut. Earle Robinson Ackley, M. C., U. S. Army, Bartow, Fla.; Medical College of Ohio, Cincinnati, 1904; aged 44; a Fellow of the American Medical Association, and of the Cincinnati Academy of Medicine; on duty at Camp Greenleaf, Fort Oglethorpe, Ga.; died in the General Hospital, Fort Oglethorpe, October 13, from pneumonia, following influenza.

Lieut. Max Marowitz, M. C., U. S. Army, Youngstown, Ohio; Chicago College of Medicine and Surgery, 1916; aged 23; a Fellow of the American Medical Association; who arrived in France, June 15, and was transferred in August to the Seventeenth Regiment, British Army; died, September 1, from wounds received while giving first aid to his men.

Lieut. Duncan M. Stone, M. C., U. S. Army, San Antonio, Texas; University of Tennessee, Nashville, 1909; aged 36; a Fellow of the American Medical Association; on duty at the Medical Officers' Training Camp, Camp Greenleaf, Fort Oglethorpe, Ga.; died in General Hospital No. 14, Fort Oglethorpe, October 13, from pneumonia, following influenza.

Lieut. Porter Perry Pillans, M. C., U. S. Army, Orlando, Fla.; Chattanooga Medical College, 1908; aged 38; a Fellow of the American Medical Association; on duty at Camp Greenleaf, Fort Oglethorpe, Ga.; a member of Company 28, M. O. T. C.; died in General Hospital No. 14, Fort Oglethorpe, October 13, from pneumonia, following influenza.

George Canning Wankel, Deerfield, N. Y.; Cornell University, New York City, 1905; aged 35; a Fellow of the American Medical Association; for three years resident physician at the Sunset Rock Sanatorium, Bloomingdale, N. Y.; for several years health officer of Deerfield, and a member of the staff of St. Elizabeth's Hospital; while assisting the government in the fight against influenza in army camps in Massachusetts was seized with the disease; died in the New England Deaconess Hospital, Boston, October 15.

Albert Tyler Chambers, Baltimore; University of Maryland, Baltimore, 1898; aged 42; a Fellow of the American Medical Association; professor of clinical surgery in his alma mater; for nine years health warden of Baltimore, and for six years a member of the board of school commissioners; died at his home, August 14, from pneumonia, following influenza.

William Winthrop Wellington, Terryville, Conn.; University of Vermont, Burlington, 1889; aged 59; at one time a Fellow of the American Medical Association; a member of the Connecticut State Medical Society; for several years medical examiner (coroner) and town health officer; died at his home, October 7, from pneumonia, following influenza.

Lieut. Waldemar T. Richards, M. C., U. S. Army, New Orleans; Tulane University, New Orleans, 1902; aged 39; a Fellow of the American Medical Association; chief surgeon to the Presbyterian Hospital, New Orleans; at one time editor of the *Pan-American Medical Journal;* died at his home, October 14, from pneumonia, following influenza.

James Morrison Ray, Louisville, Ky.; University of Louisville, Ky., 1882; aged 57; a Fellow of the American Medical Association; professor of diseases of the eye, and clinical professor of diseases of the ear, nose and throat, in his alma mater; ophthalmic surgeon to the Louisville City Hospital; died at his home, October 11, from nephritis.

Lieut. Harry Paul Martin, M. C., U. S. Army, Chicago; on duty at Camp Custer, Battle Creek, Mich.; Rush Medical College, 1916; aged 38; a Fellow of the American Medical Association; on duty with the Fourteenth Sanitary Train, Two Hundred and Fifty-Sixth Field Hospital; died at Camp Custer, October 13, from pneumonia.

Albert Carl Rice, Babylon, L. I., N. Y.; University and Bellevue Hospital Medical College, 1909; aged 36; at one time a Fellow of the American Medical Association; a member of the Medical Society of the State of New York; visiting surgeon to the Southside Hospital, Babylon; died at his home, October 11, from pneumonia.

Edward Middleton Thompson, Brooklyn; University and Bellevue Hospital Medical College, 1899; aged 41; at one time a Fellow of the American Medical Association; assistant surgeon to the New York Orthopedic Hospital and Dispensary, and visiting surgeon to the Kings County Hospital; died at his home, October 16, from pneumonia.

Clarence Currier Day, Newburyport, Mass.; Dartmouth Medical School, Hanover, N. H., 1892; aged 52; a Fellow of the American Medical Association; a member of the medical staff of the Anna Jaques Hospital; for several years city physician of Newburyport; died at his home, October 17, from pneumonia, following influenza.

Abraham Korn, New York City; College of Physicians and Surgeons in the City of New York, 1885; aged 54; a member of the Medical Society of the State of New York; for fifteen years president of the Harlem Property Owners' Association, and an authority on taxation; died at his home, October 13, from pneumonia.

Charles Ryttenberg, Port Chester, N. Y.; College of Physicians and Surgeons in the City of New York, 1906; aged 36; a Fellow of the American Medical Association; and a member of the National Association for the Study and Prevention of Tuberculosis; died in a hospital in New York City, October 16, from influenza.

Samuel J. Ozment, Fort Smith, Ark.; University of Arkansas, Little Rock, 1889; Marion-Sims College of Medicine, St. Louis, 1901; aged 52; a member of the Arkansas Medical Society; for two terms physician of Sebastian County; died in Sparks Hospital, Fort Smith, October 16, from pneumonia, following influenza.

Edwin Eugene Hunter, Elizabethton, Tenn.; Kentucky School of Medicine, Louisville, 1885; aged 74; a member of the Tennessee State Medical Association; for twenty-five years a member of the State Medical Board; was struck by a train at Elizabethton, October 10, and died from his injuries a few hours later.

Lieut. Edmond I. Moquin, M. C., U. S. Army, Fair Water, Wis.; Marquette University, Milwaukee, 1913; aged 30; a Fellow of the American Medical Association; on duty at Camp Greenleaf, Fort Oglethorpe, Ga.; died in General Hospital No. 14, at that post, October 14, from pneumonia, following influenza.

Franklin Wilbur Wilcox, St. Petersburg, Fla.; College of Physicians and Surgeons, Baltimore, 1903; aged 44; a Fellow of the American Medical Association; local surgeon of the Atlantic Coast Line Railroad; died at the home of his brother in Jacksonville, October 17, from pneumonia, following influenza.

Jefferson Davis Chason, Bainbridge, Ga.; College of Physicians and Surgeons, Baltimore, 1888; aged 56; a Fellow of the American Medical Association; chief surgeon of the Georgia, Florida and Alabama Railway; founder of Riverside Hospital, Bainbridge; died in that institution, October 13.

Leonard Cassell McPhail, Brooklyn; New York University, 1876; aged 63; at one time a member of the Medical Society of the State of New York; physician to the Brooklyn Orphan Asylum for twenty-one years; attending physician to the Brooklyn Home for Consumptives; died at his home, October 16.

Lieut. Joseph Clarence Balson, M. C., U. S. Army, Passaic, N. J.; University and Bellevue Hospital Medical College, 1912; aged 29; a Fellow of the American Medical Association, and secretary of the Passaic Practitioners' Club; died at his home, October 11, from pneumonia, following influenza.

Lieut. George Rupp Pretz, M. C., U. S. Army, Lebanon, Pa.; Johns Hopkins University, Baltimore, 1909; aged 38; a Fellow of the American Medical Association; a specialist on diseases of the eye, ear, nose and throat; on duty at Syracuse, N. Y.; died in that city, September 30, from influenza.

Asst. Surg. Robert Harry Scott, Lieutenant (j. g.), U. S. Navy, Brooklyn; Long Island College Hospital, Brooklyn, 1910; aged 33; a Fellow of the American Medical Association; assigned to duty at the Naval Rifle Range, Peekskill, N. Y.; died at Peekskill, October 15, from pneumonia.

Charles Solomon Caverly, Rutland, Vt.; University of Vermont, Burlington, 1881; aged 62; a Fellow of the American Medical Association; professor of the state board of health; professor of hygiene and preventive medicine in his alma mater; died at his home, October 16, from influenza.

Edgar D. Heaton, Lancaster, Mo.; University of Illinois, Chicago, 1904; aged 42; at one time a Fellow of the American Medical Association; was found dead in his office, October 4, from the effects of a gunshot wound of the head, self-inflicted, it is believed, with suicidal intent.

Robert Carleton Hale, Providence, R. I.; Tufts College Medical School, Boston, 1901; aged 38; a Fellow of the American Medical Association; a member of the staff of the Homeopathic Hospital, Providence; died at his home, September 30, from pneumonia, following influenza.

Vernon Lyles Andrews, Mount Gilead, N. C.; University College of Medicine, Richmond, Virginia; aged 35; at one time a Fellow of the American Medical Association; a member of the Medical Society of the State of North Carolina; died at his home, October 13, from influenza.

General Jackson Stone, Spirit Lake, Iowa; Maryland Medical College, Baltimore, 1912; aged 32; a Fellow of the American Medical Association; local surgeon for the Rock Island and Milwaukee systems; died at his home, October 16, from pneumonia, following influenza.

Donald Robertson Jacob, Louisville, Ky.; University of Louisville, Ky., 1898; aged 44; a member of the Kentucky State Medical Association; traveling representative of a wholesale drug house in Texas and Arkansas; died at Texarkana, Ark., October 16, from pneumonia.

Joseph Alexander Trommald, Portland, Ore.; University of Oregon, Portland, 1916; aged 33; for several years a druggist; died at his home, October 12, from the effects of an incised wound of the throat, self-inflicted, it is believed, with suicidal intent, while despondent.

Frank Bacon Cook, Laurel Springs, N. J.; Baltimore Medical College, 1904; aged 42; at one time a Fellow of the American Medical Association; a member of the Medical Society of New Jersey; died at his home, October 9, from pneumonia, following influenza.

Henry Thomas Kurtz, Highland Falls, N. Y.; Cornell University, New York City, 1899; aged 56; a Fellow of the American Medical Association; for several years health officer of Highland Falls; died at his home, October 15, from pneumonia, following influenza.

Lieut. Homer Coulson Parrish, M. C., U. S. Army, Fort Benton, Mont.; University of Illinois, Chicago, 1908; aged 46; on duty at Camp Greenleaf, Fort Oglethorpe, Ga.; died in General Hospital No. 14, at that post, October 14, from pneumonia, following influenza.

Lieut. Philip Frank Shaffner, M. C., U. S. Army, Chicago; Rush Medical College, 1909; aged 33; a Fellow of the American Medical Association, and a specialist on dermatology; on duty at Fort Riley, Kan.; died at that post, October 21, after an operation for appendicitis.

Lieut. Thomas Riggin Adams, M. C., U. S. Army, Califon, N. J.; Medico-Chirurgical College of Philadelphia, 1915; aged 26; a Fellow of the American Medical Association; on duty at Camp Lee, Va.; died in that place, October 4, from pneumonia, following influenza.

Lieut. Harry Charles McIntosh, M. C., U. S. Army, St. Paul; Chicago College of Medicine and Surgery, 1913; a member of the Minnesota State Medical Association; on duty at Camp Sherman, Chillicothe, Ohio; died at that post, October 6, from influenza.

Lieut. Henry Joseph Roewe, M. C., U. S. Army, Chicago; Northwestern University Medical School, Chicago, 1918; aged 26; a Fellow of the American Medical Association; an intern at Michael Reese Hospital; died in that institution, October 25, from influenza.

Robert Samuel Topping, Rutherford and Newark, N. J.; University and Bellevue Hospital Medical College, 1913; aged 35; a member of the Medical Society of New Jersey; died in the Presbyterian Hospital, Newark, October 11, from pneumonia, following influenza.

Arthur Heustis, Upton, Wyo.; Jenner Medical College, Chicago, 1906; aged 39; a Fellow of the American Medical Association; formerly a practitioner of Chicago; who went to Wyoming on account of tuberculosis; died at his home, October 21, from influenza.

Henry Kingsley Hine, Waterbury, Conn.; Maryland Medical College, Baltimore, 1908; aged 31; at one time a Fellow of the American Medical Association; a member of the Connecticut State Medical Society; died at his home, about October 7, from influenza.

Lieut. William Carlyle Kantner, Jr., M. C., U. S. Army, Seattle; Willamette University, Salem, Ore., 1907; aged 33; a Fellow of the American Medical Association; attached to Base Hospital Unit No. 50; died in France, September 15, from angina pectoris.

Lieut. Clarence Hull Dobbs, M. C., U. S. Army, Jacksonville, Fla.; Atlanta (Ga.) College of Physicians and Surgeons, 1910; a Fellow of the American Medical Association; on duty at Camp Zachary Taylor, Louisville, Ky.; died at that post, October 6.

Reuben Frank Davis, Lexington, Va.; University of Virginia, Charlottesville, 1910; aged 32; a Fellow of the American Medical Association; surgeon to the Virginia Military Institute; died at his home, October 5, from pneumonia, following influenza.

Walter William Lowell, Brooklyn; Cornell University, New York City, 1911; aged 28; a member of the Medical Society of the State of New York; assistant visiting physician to the Jamaica (Long Island) Hospital; died at his home, October 10, from pneumonia.

William Stewart Thompson, Standish, Me.; Dartmouth Medical School, Hanover, N. H., 1882; aged 64; a member of the Maine Medical Association; a member of the state legislature in 1887 and 1918; died at his home, October 2, from acute gastritis.

Clyde James Stormont, Viola, Wis.; Milwaukee Medical College, 1903; aged 37; at one time a Fellow of the American Medical Association; a member of the State Medical Society of Wisconsin; died at his home, October 6, from pneumonia, following influenza.

Died in the Service
IN FRANCE
Major Clarence Fahnestock, M. C.
U. S. Army, 1873-1918
(See The Journal, last week, p. 1429)

Walter Warren Kingsbury, Malden, Mass.; Tuft's College, Boston, 1905; aged 44; at one time a Fellow of the American Medical Association; a member of the Massachusetts Medical Society; died at his home, September 15, from pneumonia, following influenza.

Oscar J. Mugge, Cuero, Texas; Tulane University, New Orleans, 1901; aged 42; at one time a Fellow of the American Medical Association; a member of the State Medical Association of Texas; died at the Reuss Memorial Hospital, Cuero, October 12.

Robert A. Dodson, St. Michaels, Md.; University of Maryland, 1859; aged 82; at one time a member of the Medical and Chirurgical Faculty of Maryland; surgeon of the First Maryland Cavalry, U. S. V., during the Civil War; died at his home, recently.

Willis Oscar Davis, Jamaica, N. Y.; University of Louisville, Ky., 1895; aged 59; at one time a Fellow of the American Medical Association; clinical assistant in gastro-enterology at Fordham and Manhattan state hospitals; died at his home, October 4.

Stewart H. Shrock, LaGrange, Ind.; Indiana Medical School, Indianapolis, 1906; aged 36; a member of the Indiana Medical Association; died at the home of his father in La Grange, October 15, from pneumonia, following influenza.

Gardner Byron Young, Geneva, N. Y.; Bellevue Hospital Medical College, 1886; aged 58; a Fellow of the American Medical Association; a specialist in anesthesia; for eight years a member of the Geneva Board of Health; died at his home, October 1.

Lieut. James David Atkins, M. C., U. S. Army, Crichton, Ala.; University of Alabama, Mobile, 1906; aged 38, a Fellow of the American Medical Association; on duty at Camp Lee, Petersburg, Va.; died in that place, October 2, from pneumonia.

Lieut. William Karp, M. C., U. S. Army, Portsmouth, Va.; on duty at Camp Meade, Admiral, Md.; Medical College of Virginia, Richmond, 1915; aged 31; a Fellow of the American Medical Association; died in Camp Meade, October 9, from influenza.

Raymond Lockwood Leonard, Chicago; Rush Medical College, 1872; aged 68; a Fellow of the American Medical Association; died in the Post-Graduate Hospital, Chicago, October 19, from carcinoma of the bladder, following an exploratory cystotomy.

Wilfred Harry Daniels, Lancaster, Pa.; Jefferson Medical College, 1914; aged 32; a member of the Medical Society of the State of Pennsylvania; president of the Lancaster City and County Medical Society; died at his home, October 14, from influenza.

Edward Pilon, Vergennes, Vt.; University of Vermont, Burlington; aged 54; a member of the Vermont Medical Society; for twenty-seven years organist and director of the choir of St. Peter's Church; died at his home, October 14, from nephritis.

Edward Miller Ware, Beatrice, Neb.; University of Nebraska, Omaha, 1907; aged 43; at one time a Fellow of the American Medical Association; a member of the Nebraska State Medical Association; died at his home, October 14, from influenza.

Furman P. Covington, Florence, S. C.; New York University, New York City, 1885; aged 57; at one time a member of the South Carolina Medical Association; a member of the board of commissioners of Florence; died at his home, October 5.

Lieut. David Meyer Rothenberg, U. S. N. R. F., Brooklyn; College of Physicians and Surgeons in the City of New York, 1917; aged 24; a Fellow of the American Medical Association; died in the Jewish Hospital, Brooklyn, October 5, from pneumonia.

Samuel Gavronsky, Harrisburg, Pa.; University of Maryland, Baltimore, 1918; resident physician at the Harrisburg Hospital; died in that institution, October 4, from influenza.

Edgar W. Lassiter, Rich Square, N. C.; University College of Medicine, Richmond, Va., 1908; aged 37; a member of the Medical Society of the State of North Carolina; died at his home, October 12, from pneumonia, following influenza.

Henry Ferdinand Steinle, Burlington, Iowa; Gross Medical College, Denver, 1890; aged 51; a Fellow of the American Medical Association; city physician and health officer of Burlington; died at his home, October 15, from heart disease.

Benjamin James Willingham, Wilmington, N. C.; Medical College of Virginia, Richmond, 1906; aged 37; a member of the Medical Society of the State of North Carolina; died at his home, October 5, from pneumonia, following influenza.

Edwin Everett Bond, Stronghurst, Ill.; Northwestern University Medical School, Chicago, 1909; aged 32; a Fellow of the American Medical Association; died, October 5, in the Galesburg Hospital from pneumonia, following influenza.

Preston R. Merrill, Fremonton, Utah; Northwestern University Medical School, Chicago, 1906; aged 36; at one time a Fellow of the American Medical Association; died at his home, October 11, from pneumonia, following influenza.

William Donald Braislin, Brooklyn; College of Physicians and Surgeons in the City of New York, 1917; aged 25; resident physician at the Trudeau Sanatorium, Saranac Lake, N. Y.; died at that place, October 5, from pneumonia.

Adolph Morgenstern, New York City; Long Island College Hospital, Brooklyn, 1906; a member of the Medical Society of the State of New York; alternate on the staff of the New York Lying-In Hospital; died at his home, October 7.

Lieut. William C. Buffalow, M. C., U. S. Army, Jacksonville, Fla.; Lincoln Memorial University, Knoxville, Tenn., 1910; aged 33; a Fellow of the American Medical Association; died at his home, October 8, from pneumonia.

Harold Milne French, Freeport, L. I., N. Y.; New York Homeopathic Medical College, New York City, 1913; aged 34; a member of the Medical Society of the State of New York; died at his home, October 18, from pneumonia.

Cora Geneva Yates, Pawtucket, R. I.; College of Physicians and Surgeons, Boston, 1891; aged 66; a Fellow of the American Medical Association, and a specialist in pediatrics; died in her apartment in Pawtucket, September 23.

Green L. Pryor, Frankfort, Ky.; Kentucky School of Medicine, Louisville, 1868; aged 79; for forty-five years a practitioner of Monterey, Ky.; died at the home of his daughter near Frankfort, September 3, from senile debility.

John Forsyth Little, Lawrenceville, N. J.; Jefferson Medical College, 1904; aged 38; while taking care of patients at the Lawrenceville Preparatory School, contracted influenza, and died at his home, October 12, from pneumonia.

N. Van Speece, Quincy, Ohio; Starling Medical College, Columbus, Ohio, 1863; aged 79; at one time a member of the Ohio State Medical Association; a veteran of the Civil War; died at his home, October 15, from senile debility.

Thomas Miller, Jr., Washington, D. C.; George Washington University, Washington, D. C., 1913; aged 30; a Fellow of the American Medical Association; died at his home, October 6, from pneumonia, following influenza.

Herman Gross, Metuchen, N. J.; College of Physicians and Surgeons in the City of New York, 1902; aged 39; a Fellow of the American Medical Association; head of the board of health of Metuchen; died at his home, October 6.

William H. H. Smith, Council Grove, Kan.; Northwestern Medical College, St. Joseph, Mo., 1892; aged 60; at one time a Fellow of the American Medical Association; died at his home, September 28, from cerebral hemorrhage.

John Richard Perkins, New York City; College of Physicians and Surgeons in the City of New York, 1918; aged 26; an intern in the Presbyterian Hospital, New York City; died in that institution, October 9, from pneumonia.

Thomas Nash Broaddus, Richmond, Va.; Medical College of Virginia, Richmond, 1911; aged 31; a Fellow of the American Medical Association; died at his home, October 5, from bronchopneumonia, following influenza.

Asst. Surg. Harry Ellsworth Davey, Lieut. (j. g.) U. S. N. R. F., Keene, N. H.; Boston University, 1913; aged 34; a Fellow of the American Medical Association; died at his home in Keene, October 15, from influenza.

Wolf Samuel Schrayer, Chicago; University of Warsaw, Russia, 1895; Harvey Medical College, Chicago, 1900; aged 49; a Fellow of the American Medical Association; died at his home, October 14, from pneumonia.

Mathis Daniel Linehan, Dubuque, Iowa; St. Louis College of Physicians and Surgeons, 1906; aged 35; a member of the Iowa State Medical Society; died at his home, October 15, from pneumonia, following influenza.

Clifton Norwood De Vilbiss, Laytonsville, Md.; University of Maryland, Baltimore, 1910; aged 33; a member of the Medical and Chirurgical Faculty of Maryland; died at his home, October 15, from pneumonia.

Walter S. Lincoln, Dodgeville, Wis.; University of Illinois, Chicago, 1897; aged 54; a Fellow of the American Medical Association; health officer of Dodgeville; died at his home, about October 14, from pneumonia.

Harry Mayer Schall, Rochester, N. Y.; Jefferson Medical College, 1887; aged 55; a member of the Medical Society of the State of New York; died in the Rochester General Hospital, October 9, from heart disease.

Laura Bell Stoner, Battle Creek, Mich.; American Medical Missionary College, Chicago, 1904; aged 39; a member of the staff of the Battle Creek Sanitarium; died in Atlanta, Ga., October 23, from pneumonia.

John Aimone, Granville, Ill.; University of Illinois, Chicago, 1907; aged 37; a Fellow of the American Medical Association; died at his home, October 4, from bronchial pneumonia, following influenza.

John Frank Marshall, Ashland, Pa.; University of Pennsylvania, Philadelphia, 1907; aged 36; a Fellow of the American Medical Association; died at his home, October 9, from pneumonia, following influenza.

Albert Harry Herr, Okmulgee, Okla.; Chicago College of Medicine and Surgery, 1912; aged 30; a Fellow of the American Medical Association; died at his home, October 8, from pneumonia, following influenza.

Harvey F. Eichman, Chicago; Chicago College of Medicine and Surgery, 1910; aged 40; a Fellow of the American Medical Association; died at his home, October 14, from pneumonia, following influenza.

William H. Wells, Stronghurst, Ill.; University of Illinois, Chicago, 1897; aged 57; a Fellow of the American Medical Association; died in the Galesburg Hospital, October 5, from pneumonia, following influenza.

Nellie S. Hayes, Los Angeles; University of Southern California, Los Angeles, 1904; aged 42; a Fellow of the American Medical Association; died at her home, October 11, from pneumonia, following influenza.

Sigurd Peter Dahl, Decorah, Iowa; Drake University, Des Moines, Iowa, 1913; aged 33; a Fellow of the American Medical Association; died at his home, October 9, from pneumonia, following influenza.

Henry W. Dew, Lynchburg, Va.; College of Physicians and Surgeons, Baltimore, 1886; aged 56; a Fellow of the American Medical Association; died at his home, October 17, from pneumonia, following influenza.

Isadore Jacques Grossman, Brooklyn; University and Bellevue Hospital Medical College, 1915; aged 26; house physician of the Jewish Hospital, Brooklyn; died at his home, October 13, from pneumonia.

James Elmer Chapman, Bloomingburg, Ohio; Starling Medical College, Columbus, Ohio, 1903; aged 46; a member of the Ohio State Medical Association; died at his home, October 5, from influenza.

Carl Neal Etchison, Gaithersburg, Md.; Maryland Medical College, Baltimore, 1908; aged 32; a member of the Medical and Chirurgical Faculty of Maryland; died at his home, October 17, from influenza.

William Garner White, York, S. C.; University of Maryland, Baltimore, 1883; aged 60; at one time a member of the South Carolina Medical Association; died at his home, October 12, from pneumonia.

Joseph Johnston Stevens, Hattiesburg, Miss.; Tulane University, New Orleans, 1890; aged 51; at one time a Fellow of the American Medical Association; died at his home, October 15, from heart disease.

Ernest William Auzal, New York City; University of Vermont, Burlington, 1884; aged 58; a Fellow of the American Medical Association; a specialist in neuropathology; died at his home, October 11.

Henry M. Fagaines, Chandler, Okla.; University of Wooster, Cleveland, 1880; aged 61; formerly a member of the Oklahoma State Medical Association; died at his home, October 12, from pneumonia.

Elizabeth Aileen Lynch Schuler, Winona, Minn.; Milwaukee Medical College, 1910; aged 34; a member of the Minnesota State Medical Association; died at her home, October 18, from influenza.

J. P. Phillips, Florala, Ala.; Memphis Hospital Medical College, 1898; at one time a member of the Medical Association of the State of Alabama; died at his home, October 11, from influenza.

John G. Hoeckh, Buffalo; University of Buffalo, 1907; aged 33; clinical pathologist to the Ernest Wende Hospital, and assistant physician of Erie County; died at his home, October 5, from pneumonia.

Munroe Dart Youngman, Ardmore, Pa.; Hahnemann Medical College, Philadelphia, 1911; aged 32; a Fellow of the American Medical Association; died at his home, October 11, from pneumonia.

Lou N. Byers, Aurora, Ill.; Chicago College of Medicine and Surgery, 1911; aged 33; a Fellow of the American Medical Association; died at her home in Aurora, October 3, from pneumonia.

Lieut. Clark Denike Fanton, M. C., U. S. Army, Riverside, Calif.; State University of Iowa, Iowa City, 1915; aged 30; is reported to have died, recently, at a military camp in California.

David Robert Hancock, Redondo Beach, Calif.; Starling Medical College, Columbus, Ohio, 1892; aged 48; city health officer since 1894; died in Redondo Beach, October 14, from pneumonia.

Robert M. C. Gavin, Tonganoxie, Kan.; Philadelphia University of Medicine and Surgery, 1878; aged 61; for many years a practitioner of Lebo, Kan.; died at his home, October 5.

Edward J. Murray, Scranton, Pa.; Baltimore Medical College, 1910; aged 33; at one time a Fellow of the American Medical Association; died at his home in Throop, Pa., about October 9.

Fred McVey Towles, Fort Wayne, Ind.; Medical College of Indiana, Indianapolis, 1902; aged 45; assistant surgeon of the Pennsylvania System, at Fort Wayne; died at his home, October 8.

Leo Gernand Maury, Chicago; Northwestern University Medical School, Chicago, 1918; aged 23; an intern in Michael Reese Hospital; died in that institution, October 19, from influenza.

John Henry Bender, Wetzel, Ohio; Ohio State University, Columbus, 1912; aged 31; a member of the Ohio State Medical Association; died at his home, about October 9, from influenza.

William Francis Brown, Roxbury, Boston and Nahant, Mass. (license, Massachusetts, years of practice); aged 61; died at his summer home in Nahant, October 2, from heart disease.

Warren B. Rush, Lake City, Fla.; Jefferson Medical College, 1893; aged 70; a Fellow of the American Medical Association; died at his home, September 11, from cerebral hemorrhage.

Jacob Chasan, New York City; Long Island College Hospital, Brooklyn, 1911; aged 34; assistant physician to the Bronx Hospital; died at his home, October 9, from pneumonia.

Jesse D. Hodges, Little Rock, Ark.; Chicago College of Medicine and Surgery, 1914; aged 35; president of the Arkansas Pharmaceutical Association; died at his home, October 15.

Herbert Sumner Reynolds, Clinton, Conn.; New York University, New York City, 1881; aged 58; died in Grace Hospital, New Haven, Conn., October 9, after a surgical operation.

Ancil Gatliff, Williamsburg, Ky.; Hospital College of Medicine, Louisville, Ky., 1876; aged 70; one of the largest coal operators of eastern Kentucky; died at his home, October 14.

Frank Horan Collins, New York City; University of Pennsylvania, Philadelphia, 1906; assistant surgeon to the Throat, Nose and Lung Hospital; died at his home, about October 14.

Charles H. Hunter, Minneapolis, College of Physicians and Surgeons in the City of New York, 1878; aged 65; died at the Eitel Hospital, Minneapolis, October 15, from nephritis.

Abraham James Gordon, Philadelphia; Jefferson Medical College, 1912; aged 29; intern in the Jewish Hospital, Philadelphia; died in that institution, October 6, from influenza.

Lieut. Carl Stoepler, M. C., U. S. Army, Philadelphia; Medico-Chirurgical College of Philadelphia, 1912; aged 36; died in the Polyclinic Hospital of Philadelphia, October 9.

Capt. William Fielding McIsaac, C. A. M. C., Antigonish, Nova Scotia; on duty with No. 9 Stationary Hospital in France, is reported to have died from wounds, recently.

William Harris Corson, Jr., Collegeville, Pa.; Hahnemann Medical College, Philadelphia, 1909; aged 34; died at his home, October 9, from pneumonia, following influenza.

James F. Folz, Philadelphia; Medico-Chirurgical College, Philadelphia, 1897; aged 45; district city physician; died at the Northeast Hospital, October 10, from pneumonia.

Bernard William Junge, New York City; University of Buffalo, N. Y., 1900; aged 49; a Fellow of the American Medical Association; died at his home, October 12.

Walter Arthur Watts, Pawtucket, R. I.; University of Vermont, Burlington, 1910; aged 38; city physician of Pawtucket; died at his home, October 7, from influenza.

George Lewis Smith, Philadelphia; University of Pennsylvania, Philadelphia, 1897; aged 47; died at his home, October 10, from pneumonia, following influenza.

John Francis Munns, Bremerton, Wash.; University of Minnesota, Minneapolis, 1903; aged 46; died at his home, October 13, from pneumonia, following influenza.

Benjamin J. See, Harris, Ill. (license, years of practice, Illinois, 1878); aged 94; a practitioner for sixty-five years; died at the home of his son in Paris, October 11.

Chauncey Benjamin Lambert, Riverside, N. J.; Hahnemann Medical College, Philadelphia, 1904; died at his home, October 8, from pneumonia, following influenza.

Edward Stack Grace, New Britain, Conn.; University of Vermont, Burlington, 1914; aged 29; died at his home, October 8, from pneumonia, following influenza.

Frank Timothy Mara, Boston; Harvard Medical School, 1887; aged 52; died in St. Elizabeth's Hospital, October 3, from pneumonia, following influenza.

Charles Emera James, Laurel, Del.; Jefferson Medical College, 1911; aged 33; formerly of Charptown, Md.; died at his home, October 13, from influenza.

Capt. J. T. Whitworth Boyd, C. A. M. C., Port Arthur, Ont.; Queens University, Kingston, Ont., 1914; is reported to have died from wounds, recently.

Francis M. Yost, Center Point, Iowa (license, Iowa, years of practice, 1887); aged 87; a practitioner of medicine since 1853; died at his home, October 12.

Grant Mitchell, Pittsburgh; University of Illinois, Chicago, 1896; aged 54; a practitioner of dentistry for thirty-two years; died at his home, October 1.

Work A. Streeter, Harrisburg, Pa.; Hahnemann Medical College, Philadelphia, 1916; aged 28; died in Harrisburg, October 14, from pneumonia.

Edward Joseph Therrien, Marlboro, Mass.; Ecole de Médecine et de Chirurgie, Montreal, 1886; aged 62; died at his home, about October 13.

Capt. M. A. McKechnie, C. A. M. C., Walkerton, Ont.; Queens University, Kingston, Ont., 1917; is reported to have died of wounds, recently.

George Whitefield Holmes, Atlanta, Ga.; Atlanta Medical College, 1898; aged 64; died at a private sanitarium, in Atlanta, October 14.

Samuel C. Blair, Philadelphia, University of Pennsylvania, Philadelphia, 1878; aged 64; died at his home, October 9, from heart disease.

Abram B. Patton, Waynesburg, Pa.; Jefferson Medical College, 1877; aged 67; died at his home, October 9, from cerebral hemorrhage.

Robert J. Cunniff, Philadelphia; Maryland Medical College, Baltimore, 1909; aged 37; died at his home, October 7, from pneumonia.

Earl Clifton West, Laurel, Del.; Maryland Medical College, Baltimore, 1912; aged 33; died at his home, October 13, from influenza.

James Mackay Montgomery, Philadelphia; Jefferson Medical College, 1897; aged 55; died at his home, October 7, from influenza.

Robert A. Baldridge, Farmersburg, Ind.; Eclectic Medical Institute, Cincinnati, 1884; aged 82; died at his home, October 3.

Albion Horace Allen, New London, Conn.; Boston University, 1875; aged 81; died at his home, about September 17.

Stephen John Songy, Wallace, La.; Tulane University, New Orleans, 1913; aged 29; died at his home, recently.

Correspondence

THE TREATMENT OF "SPANISH INFLUENZA"

To the Editor:—In a number of cases of influenza and influenzal pneumonia, seen both in my private practice and at the Alexian Brothers' Hospital, I have used a treatment from which my results have been most satisfactory.

The clinical course of the condition may be divided for convenience into three stages. The first lasts from three to four days, and is characterized by chills, fever, muscular pain, etc. The second is of rather uncertain duration, and is characterized by involvement of the respiratory system varying in degree from a slight catarrhal condition to the involvement of a large area of one or both lungs. The third is characterized by disturbances of the circulatory system, dyspnea and cyanosis.

In the treatment, the patient receives as soon as possible from 10 to 20 c.c. of a saturated solution of quinin hydrochlorid. This is given intravenously and is repeated once or twice in twenty-four hours. It is followed for from two to five days by one or two daily injections of the same solution, the quantity depending on the condition of the patient. In addition, the patient receives 4 grains of quinin bisulphate and 6 grains of sodium salicylate over three hours. This may be given either in capsules or solution, but it is important that the two drugs be given together. I make it a rule to continue the intravenous injection until the temperature remains normal or subnormal for at least thirty-six hours; I continue the quinin and the sodium salicylate until the temperature has continued normal or subnormal for three consecutive days. With this treatment, all patients that came under my observation within three days of the onset of symptoms made a rapid and uninterrupted recovery within from one to three days. In no case did they continue into the second stage, or show any complication. Patients that came under my observation in whom the symptoms lasted more than three days, and those of the second stage with respiratory symptoms, all made rapid and uninterrupted recovery in from one to eight days. We also had a very slight mortality in cases of the third stage.

Under this treatment a marked improvement may be noticed in the leukocyte count. In cases in which the leukocyte count was 2,000 before the injection there was a decided rise to 4,000 or 5,000 immediately following the first injection, and after repeated injections even as high as 21,000.

I cannot too strongly call attention to the importance of keeping the bowels open by mild cathartics. Often a lingering temperature disappeared after a brisk flushing of the bowels, and this method greatly aided in shortening the course of the disease.

Some may regard the dosage of quinin given as heroic, but I find that it represents rather the minimum than the maximum amount with which results may be obtained.

H. A. Klein, M.D., Chicago.

DEPENDABILITY OF DOSAGE IN TABLETS

To the Editor:—In your article—"Dependability of Dosage in Tablets" (The Journal A. M. A., *July 27, 1918*), we feel that an unintentional injustice has been done us. In citing the work done by the Connecticut Agricultural Experiment Station, and stating that "Allowing a tolerance in composition of 10 per cent., one or more products of the following manufacturers were found deficient," our name has been included in this list. In your brief abstract of the matter it was not possible to state that of the twelve samples of tablets of our manufacture (The G. F. Harvey Company and the Harvey Company are one and the same) examined in 1916 and 1917, that while one sample was found deficient in strength, this sample was of such a nature that it could not by eminent authorities be expected to test up to labeled strength.

The sample here referred to is Digestive Aromatic Tablets. Leading authorities on combinations of Pepsin and Pancreatin, including the very chemists who made the examinations in question, including also the authorities quoted in your article in the A. M. A., Aug. 20, 1910, on Aromatic Digestive Tablets, concede that there is an interaction when in combination, in tablets made by the generally approved methods.

The general method in making compressed tablets is that after mixing carefully the several ingredients, the mixture is moistened sufficiently to permit of a granulation being made and such granulation is then dried carefully with regulated artificial heat. While it would be possible in this particular tablet to make separate granulations of the incompatible substances and mix such granulations only after each is thoroughly dry, yet the tablets would not be more valuable because the destructive process would ensue after the tablets came in contact with the secretions of the alimentary tract.

In view of these facts, we think we should be exonerated from any adverse criticism on this twelfth sample of ours examined and we thank you most heartily for your spirit of fairness in now calling this matter to the attention of the readers of The Journal.

The Harvey Co., Saratoga Springs, N. Y.

[Comment.—The Harvey Company seems to hold the opinion that it does not matter whether or not Aromatic Digestive Tablets contain the amount of ferments claimed on the label, since, in any case, these ferments would mutually destroy each other, as soon as such tablets came in contact with the digestive secretions. No excuse can be, or is, offered for those physicians who prescribe such absurdities as Aromatic Digestive Tablets (The Journal, Aug. 20, 1910, p. 710), but neither is there any justification for a firm selling a product which it knows will not measure up to the claims made for it. In this connection, it is worth repeating what The Journal said on this subject as long ago as *Dec. 19, 1914*:

> "Manufacturers are warned by the Department of Agriculture through the Bureau of Chemistry, that combinations claiming to contain digestive enzymes must be active when sold. If preparations tend to deteriorate in a short time, each lot should be dated and not sold after the period when they become inactive. While every manufacturer must be considered innocent until proved guilty and ignorant until proved knowing, it is a matter of knowledge that many manufacturers have marketed their various digestive mixtures with full appreciation of their worthlessness.—Ed.]

POINT OF VIEW OF JOHN AMES MITCHELL, PUBLISHER OF LIFE

To the Editor:—I have been greatly interested in a biographic sketch of John Ames Mitchell, proprietor of *Life*, published in the *Harvard Graduates' Magazine*, September, 1918. The biography was written by E. S. Martin of the class of '77 of Harvard University. We all have enjoyed Mr. Mitchell's attacks on the medical profession, which rarely failed to be found in every number of *Life*. The part of the biography which interests the readers of The Journal is as follows:

> He was by no means completely educated. But no one ever is. He was cultivated, his taste was trained, and whether it dealt with art, letters or deportment, it was good taste. But imperfect knowledge of facts, or unwillingness or inability to weigh them, often led him to queer conclusions which he stuck to with the utmost tenacity. About medicine, for example, he was not only a heretic, but a fighting opponent of pretty much the whole scheme of modern medicine. Not only he hated and fought vivisection, against which there is plenty to be said, but all the use of serums was abhorrent to him. He would deny that vaccination had abated smallpox, and say that sanitation had done it. If he could, he would have forbidden inoculation for typhoid.
>
> Modern medicine is not perfect, and assaults on it are not without value. When bleeding was the accepted practice, Molière was scandalous when he ridiculed it. It is quite conceivable that modern medical practice will give way as knowledge advances to something better, but while it lasts it is held to be almost treasonable to doubt it, and whoever attacks it has need of courage.
>
> Mitchell had the courage. He always had the courage to attack anything he thought was wrong, and whether or not it grieved the readers of *Life* or advertisers it never gave him much concern.

All that is good in medicine has never suffered from the wit and sarcasm which Mitchell was constantly hurling at the profession. His biographer has clearly indicated that there was no malice in these missiles. We are all aware of the shortcomings of medicine. The profession will never suffer from attacks, even to a certain extent baseless, which are made either in a spirit of amusement or from a genuine desire to criticize. I, for one, shall miss Mitchell's arrows, and *Life* will be less interesting by reason of his death. I once had in mind to write to Mr. Mitchell that inasmuch as he was continually attacking the medical profession, whose purpose it is to save life, he ought to change the title of his paper to *Death*. He perhaps would not have acted favorably on my suggestion.

H. W. Wiley, M.D., Washington, D. C.

"THE PROPAGANDA OF THE V. M. S. C."

To the Editor:—An editorial comment in The Journal (Oct. 5, 1918, p. 1141) contains a reference to a proposed resolution in the *Bulletin* of the Buchanan County Medical Society bearing on the membership therein as related to the Volunteer Medical Service Corps. The *Bulletin* was in error in stating that the resolution was introduced at the request of the Council of National Defense, Medical Section. It was introduced at the request of the Missouri State Committee of the Council of National Defense, Medical Section.

Daniel Morton, M.D., St. Joseph, Mo.
President, Buchanan County Medical Society.

Queries and Minor Notes

Anonymous Communications and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted, on request.

DELAY IN RECEIPT OF ORDERS

To the Editor:—Please advise me as to the correctness of the information in The Journal, October 12, concerning Dr. M. W. R. of Missouri. The item stated that Lieut. M. W. R., Missouri, had orders, or was to proceed to Fort Riley, Kan., for a course of instruction. Did I read it right? So far I have not received any orders to report, and am anxious to get them.

M. W. R., M.D., Missouri.

Answer.—This question is continually coming in. The orders as published in The Journal are taken from the carbon copies of the orders sent by the Surgeon-General's Office to the Adjutant-General's Office. Frequently considerable delay occurs in the Adjutant-General's Office. If the order appears in The Journal but is not received by the officer within a reasonable time, he should write to the Surgeon-General's Office, stating the facts.

DIPHTHERIA ANTITOXIN TREATMENT OF INFLUENZA

To the Editor:—Please advise me as to the value of diphtheria antitoxin in the treatment of the present epidemic of influenza.

Alward H. White, M.D., Shafter, Texas.

Answer.—There is no scientific reason to believe that diphtheria antitoxin can have any more value in influenza than an equal quantity of horse serum.

BEST WAY TO KEEP STATIC MACHINES DRY

To the Editor:—In The Journal, Aug. 31, 1918, M. H. F. makes inquiry as to the best and cheapest method of keeping the air within a static machine dry. If the doctor will keep a dish containing about 1 pound of sulphuric acid (92.5 per cent.) in one end of the machine, he will find that moisture will give him no trouble. The acid must be changed about once in three or four months, as it absorbs so much water in that length of time that it becomes ineffective.

M. G. Sloan, M.D., Des Moines, Iowa.

Epinephrin in Treatment of Eczema.—The *Riforma Medica* quotes the *Annali di Medicina Navale* of July 22, 1918, to the effect that P. Trapani found that many forms of eczema subsided under subcutaneous injection of epinephrin. He injected it in the buttocks or in the vicinity of the focus, commencing with ⅛ mg. in physiologic solution and increasing to ¼ mg. He never had to make more than fifteen or twenty injections at most, giving them daily or on alternate days. Even chronic eczema of long standing subsided the same as the acute and partial.

Medical Education and State Boards of Registration

COMING EXAMINATIONS

Arkansas: Little Rock, Nov. 12-13. Sec., Regular Bd., Dr. T. J. Stout, Brinkley, Ark.; Sec., Eclectic Bd., Dr. C. E. Laws, 803½ Garrison Ave., Ft. Smith.

Connecticut: New Haven, Nov. 12-13. Sec., Regular Bd., Dr. C. A. Tuttle, 196 York St., New Haven; Sec., Eclectic Bd., Dr. James E. Hair, 730 State St., Bridgeport; Sec., Homeopathic Bd., Dr. E. C. M. Hall, 82 Grand Ave., New Haven.

Delaware: Wilmington, Dec. 10-12. Sec., Dr. H. W. Briggs, 1026 Jackson St., Wilmington.

Iowa: Des Moines, Dec. 10-12. Sec., Dr. G. H. Sumner, Capitol Bldg., Des Moines.

Louisiana: New Orleans, Dec. 2-4. Sec., Dr. E. W. Mahler, 730 Audubon Bldg., New Orleans.

Maine: Portland, Nov. 12-13. Sec., Dr. Frank W. Searle, 776 Congress St., Portland.

Maryland: Baltimore, Dec. 10. Sec., Dr. J. McP. Scott, 137 W. Washington St., Hagerstown.

Massachusetts: Boston, Nov. 12-14. Sec., Dr. Walter P. Bowers, No. 1 Beacon St., Boston.

Nebraska: Lincoln, Nov. 13. Sec., H. J. Lehnhoff, 514 First Natl. Bk. Bldg., Lincoln.

Nevada: Carson City, Nov. 4. Sec., Dr. S. L. Lee, Carson City.

Ohio: Columbus, Dec. 3-5. Sec., Dr. H. M. Platter, State House, Columbus.

Texas: Dallas, Nov. 19-21. Sec., Dr. M. F. Bettencourt, Mart.

Virginia: Richmond, Dec. 10-13. Sec., Dr. J. W. Preston, 215 S. Jefferson St., Roanoke.

West Virginia: Charleston, Nov. 19-21. Sec., Dr. S. L. Jepson, Masonic Bldg., Charleston.

Virginia June Examination

Dr. J. W. Preston, secretary of the Virginia State Board of Medical Examiners, reports the written examination held at Richmond, June 18-21, 1918. The examination covered 9 subjects and included 90 questions. An average of 75 per cent. was required to pass. Of 42 candidates examined, 37, including 1 osteopath, passed, and 5 failed. Thirteen candidates were licensed through reciprocity. The following colleges were represented:

College	Year Grad.	Per Cent.
PASSED		
Howard University	(1917)	86
Bennett Medical College	(1909)	82
Johns Hopkins University	(1918)	88, 94
Maryland Medical College	(1909) 76; (1913)	78
Leonard Medical School	(1910)	84
Jefferson Medical College	(1915)	93
University of the South	(1901)	81
Medical College of Virginia	(1917) *; (1918)	77, 77, 81, 81, 82, 83, 83, 84, 84, 86, 86, 87, 87, 92.
University of Virginia	(1918)	86, 87, 87, 89, 91, 91, 92, 93, 93, 96, *.
Queen's University	(1908)	89
FAILED		
Rush Medical College	(1899)	67
University of Nashville	(1904)	62
Medical College of Virginia	(1916) 64; (1917) 69; (1918)	61

*No grade given.

College	Year Grad.	Reciprocity with
LICENSED THROUGH RECIPROCITY		
George Washington University	(1914)	Dist. Colum.
Louisville and Hospital Medical College	(1908)	Indiana
Baltimore Medical College	(1909)	Dist. Colum.
College of Physicians and Surgeons, Baltimore	(1893)	N. Carolina
Johns Hopkins University	(1911) Maryland; (1912)	Dist. Colum.
St. Joseph Medical College	(1886)	Kansas
University of the City of New York	(1890)	New York
Hahnemann Med. College and Hosp. of Philadelphia	(1901)	Penna.
Medico-Chirurgical College of Philadelphia	(1896)	Penna.
University of Pennsylvania	(1899)	Penna.
Lincoln Memorial University	(1915)	Tennessee
Vanderbilt University	(1915)	Tennessee

West Virginia July Examination

Dr. S. L. Jepson, health commissioner of the West Virginia Public Health Council, reports the oral, practical and written examination held at Wheeling, July 9, 1918. The examination covered 10 subjects and included 100 questions. An average of 80 per cent. was required to pass. Of the 9 candidates examined, 8 passed and 1 failed. The following colleges were represented:

College	Year Grad.	Per Cent.
PASSED		
University of Arkansas	(1918)	83.7
Chicago College of Medicine and Surgery	(1918)	84,4, 84.5, 85.1, 92.1.
Maryland Medical College	(1904)	88.5
Medical College of Virginia	(1918)	90.5
University of Virginia	(1917)	85.7
FAILED		
Meharry Medical College	(1918)	75.9

Book Notices

Practical Guide to Diseases of the Throat, Nose, and Ear. For Senior Students and Junior Practitioners. By William Lamb, M.D., C.M., M.R.C.P. Fourth Edition. Cloth. Price, $3.00. New York: William Wood & Co., 1918.

This little volume, intended primarily for the student and general practitioner, is fairly comprehensive, though devoid of much important detail. The subject matter is considered mainly from the standpoint of symptomatology and treatment. The various affections of the throat, nose and ear are not treated as entities but grouped under a few headings. For instance, all symptoms arising from nasal affections are discussed in one or two chapters, and the diagnosis of the different diseases responsible for them indicated according to the predominance of one or more symptoms or group of such findings, following which the treatment is taken up as directed toward this, that or the other combination. The author is conservative in his surgical treatment of tonsillar affections, giving more prominence to tonsillotomy and reserving complete enucleation only for certain well defined cases. This is rather contrary to the generally accepted American view on this subject. Criticism of this attitude, however, should be cautious, as the last word on the tonsil question has yet to be spoken; we are not in the position to say whether the author's views are antiquated or a step ahead of us. Especially meritorious are the chapters on the danger symptoms in suppurative ear diseases and the indications for surgical intervention. These are of high importance to the general practitioner and seldom have been so clearly set forth as in this book. Sufficient of the complex anatomy of the throat, nose and ear is given to make the text more intelligible and to refresh the memory of the general practitioner, to whom these structures have always been more or less of a muddle.

Neurological Clinics: Exercises in the Diagnosis of Diseases of the Nervous System. Given at the Neurological Institute, New York, by the Staff of the First Division. Edited by Joseph Collins, M.D. Cloth. Price, $3. Pp. 271. New York: Paul B. Hoeber, 1918.

The subtitle, "Exercises in the Diagnosis of Diseases of the Nervous System," indicates the function of this volume; it consists of a collection of forty-one reports made by the staff of the first division of the New York Neurological Institute. With few exceptions each of the reports is of a single case, and in length they vary from two to twenty-eight pages. Most of the cases are organic, but there is an excellent report (by Naccarati) on obsessions and fixed ideas; one on a case of paramyoclonus multiplex, and three on dementia praecox. The organic cases present a wide diversity, and every one is interesting and instructive. Vascular lesions, syphilis and tumors receive considerable attention, while of the more unusual things may be instanced progressive hemiplegia, astereognosis without hemiplegia, partial blindness from disease of the accessory nasal sinuses, symptomatic tic douloureux, disseminated lesions of the spinal cord due to malaria, and sudden paraplegia after injections of autolysin (Beebe's serum). Neither neurologist nor general practitioner can read this book without edification and benefit; it is a good place to look for help on a puzzling case.

Clinical Diagnosis: A Manual of Laboratory Methods. By James Campbell Todd, Ph.B., M.D., Professor of Clinical Pathology, University of Colorado. Fourth edition. Cloth. Price, $3 net. Pp. 687, with 244 illustrations. Philadelphia: W. B. Saunders Company, 1918.

The author has had as his aim in the preparation of this manual a practical work for the student and the practitioner rather than the laboratory worker. Clearness and simplicity are requisites for such a book; clearness in description of tests and processes, simplicity in apparatus and equipment—not too many methods, but judicious selection of those to be emphasized and recommended. This has been attained satisfactorily. The considerable amount of space devoted to the technic of the microscope is worth while, the illustrations, both colored plates and photomicrographs, are good, and the information given is up to date, while the interpretation of findings is of great practical value. In this edition many subjects are elaborated, others added, some omitted, and the whole work thoroughly revised.

Medicolegal

Insufficient Evidence of Malpractice—Results and Requirements

(O'Grady v. Cadwallader (Iowa), 166 N. W. R. 755)

The Supreme Court of Iowa, in affirming a judgment in favor of the defendant, who was charged with negligence in reducing and treating a fracture of the radius of the plaintiff's left arm, says that this was purely a fact case, with the burden of proof resting on the plaintiff. The allegation of negligence on which recovery was sought was, first, that the defendant was negligent in not reducing the fracture properly, and second, that he was negligent in using only pasteboard splints at first, and afterward inadequate and improper splints, and in not applying proper bandages and appliances to keep the broken ends in alinement or proper apposition. But there was no direct evidence that the fracture was not properly reduced; no direct evidence that the splints and bandages were not the splints and bandages that are usually and ordinarily used by physicians in the treatment of such injuries; no direct evidence that they were not properly placed on the arm by the defendant at the time.

There was only the following showing as a basic fact on which to conclude, deductively, that the fracture was not properly reduced, and that the proper appliances were not made to hold it in position after reduction: Some of the physicians called by the plaintiff testified that from an examination of roentgenograms made a little more than three months and a half after the fracture, when the plaintiff went to another physician, the bone did not there appear to have been placed in proper apposition, that the alinement was not perfect, and that this condition might be due to the manner in which the fracture was reduced in the first place, or to the manner in which it was treated after it was reduced. But it also appeared from the other physician to whom the plaintiff went that these pictures did not show the true condition of the bone, its position and alinement, as it was actually found by him when he made an incision baring the bone, and did not show the true relationship of the radius to the ulna and the true condition of the fracture. His testimony led the mind to the conclusion that the only defect or deformity found was due to excessive callus adhering to the ulna; that this, chiseled away, left the arm with all its functions perfectly normal. Nor was there anything in the record to show that when the plaintiff ceased his treatments at the hands of the defendant the period had passed when the physician, in good judgment, should have resorted to the open method for relief.

On the facts shown in this record, the court feels that any verdict rendered by a jury would rest on the merest speculation, and could find no support in any tangible fact shown by the plaintiff. A verdict for the plaintiff could not stand on this record, and the trial court was justified in directing a verdict for the defendant.

There is no implied guaranty of results, and all the law demands is that the practitioner bring to the service of his patient and apply to the case that degree of skill and care, knowledge and attention ordinarily possessed and exercised by practitioners of the medical profession under like circumstances and in like localities, and it is the general holding of the courts that the bare fact that full recovery does not result, or that a surgical operation is not entirely successful, is not, in and of itself, evidence of negligence; and, in the absence of any showing from those learned in the profession that there was a failure to do that which ought to have been done in the treatment of the injury, or that there was that done which ought not to have been done in the treatment, there can be no recovery of damages. The fact on which negligence is predicated must be shown either affirmatively, by direct evidence, or deductively, by conditions shown to exist after the treatment. But conditions, even though they show bad results, are not in and of themselves sufficient, but such results may form a basis on which an expert, learned in the profession, may be permitted to base an opinion that the operator failed in the full discharge of his duty in the treatment of the case, or the results would not appear as they are.

Current Medical Literature

AMERICAN

Titles marked with an asterisk (*) are abstracted below.

American Journal of Ophthalmology, Chicago

September, 1918, **1**, No. 9

1 Treatment of Blood Cysts of Orbit. H. Gifford, Omaha.—p. 625.
2 Management of Cases of Noninflammatory Glaucoma, Classified as Simple Anterior or Simple Posterior Glaucoma. W. R. Parker, Detroit.—p. 628.
3 Refractive Differences in Foveal and Parafoveal Vision. D. Ogata and F. W. Weymouth, Standford University, Calif.—p. 630.
4 Conjunctivitis Meibomiana (Elschnig). K. Hiwatari, Kagoshima, Japan.—p. 645.
5 Metastatic Endophthalmitis Associated with Epidemic Cerebrospinal Meningitis. H. C. Haden, Galveston, Texas.—p. 647.
6 Quinin Poisoning, Its Ocular Lesions and Visual Disturbances. R. H. Elliot, London, England.—p. 650.
7 Acute Iritis Developed after Amebic Dysentery. R. P. Luna, Guatemala, C. A.—p. 658.
8 Probable Rôle of Teeth and Tonsils in Etiology of Inflammatory Eye Diseases. W. G. Harrison, Birmingham, Ala.—p. 660.
9 Convergent Strabismus Treated by Atropin and Glasses; Cases of Hereditary Strabismus. C. Loeb, Chicago.—p. 667.

American Journal of Medical Sciences, Philadelphia

October, 1918, **156**, No. 4

10 *Huge Hemangioma of Liver Associated with Hemangiomata of Skull and Bilateral Cystic Suprarenals. R. H. Major and D. R. Black, Rosedale, Kan.—p. 469.
11 *Operable Tumor Involving Gasserian Ganglion. C. H. Frazier, Philadelphia.—p. 483.
12 Sahli's Volume Sphygmobolometer; Improvement Over Older Pressure Sphygmobolometer. N. B. Potter, Santa Barbara, Calif.—p. 490.
13 Diagnosis of Chronic Appendicitis. W. F. Cheney, San Francisco.—p. 494.
14 *Multiple Neurofibromatosis (von Recklinghausen's Disease) and Its Inheritance; Report of Case. S. A Preiser and C. B Davenport, Cold Spring Harbor, N. Y.—p. 507.
15 Teeth and Tonsils as Causative Factors in Arthritis. R. Hammond, Providence, R. I.—p. 541.
16 *Experimental Lesions in Cervical Sympathetic Ganglia in Relation to Exophthalmic Goiter. L B. Wilson, Rochester, Minn.—p 553.
17 *Relationship of Origin of Ectopic Contractions to Ventricular Preponderance as Shown by Electrocardiograph. A. E. Strauss, St. Louis.—p. 557.
18 Studies in Cholelithiasis. Immediate Effect of Operations on Cholesterinemia. A. O. Wilensky and M. A. Rothschild, New York.—p. 564.
19 *Reinfection with Streptococcus Hemolyticus in Lobar Pneumonia, Measles and Scarlet Fever; Its Prevention. L. Clendening, Fort Sam Houston, Texas.—p. 575.
20 Milk. D. R. Mendenhall.—p. 586.

10. **Hemangioma of Liver, Skull and Suprarenals.**—A brief summary of the pathologic findings in this case showed: 1. A huge hemangioma of the liver weighing nearly one half (4.9) of the entire weight of the patient. This hemangioma was a growing tumor, an example of a true hemangioblastoma. 2. Two hemangiomas of the skull, located in the temporal bones. 3. Multiple cysts of both suprarenals, apparently the result of congenital disturbances of growth in which connective tissue lymphatics and blood vessels have all played a rôle. Degenerative changes were very marked.

11. **Tumor Involving Gasserian Ganglion.**—In Frazier's patient the operation was performed within three months of the first symptom. The patient was seen fifteen months after the operation and, apart from certain paresthesias, which might well have been due to avulsion of the sensory root, there were no signs of recurrence. The tumor was an endothelioma.

14. **Multiple Neurofibromatosis.**—A description is given by Preiser and Davenport of the occurrence of von Recklinghausen's disease in a father and son, with the necropsy findings in the case of the father, in whom the disease lasted thirteen years. In the case of the son the disease associated with definite mental inferiority and delayed sexual development. A review and analysis of the literature of 243 cases of multiple neurofibromatosis is made, as well as an analysis of thirty cases of the familial type, with charts of families in which there were two or more affected persons in one family. This establishes its hereditary tendency, showing the hereditary factor to be dominant, there being something in the germ plasm that positively facilitates the production, under appropriate stimulation, of tumors of the nerve sheaths. The relation of neurofibromatosis to malignancy is discussed.

16. **Cervical Sympathetic Ganglia and Exophthalmic Goiter.**—Experiments made by Wilson to determine the effect directly on the cervical sympathetic ganglia and indirectly on the thyroid of various forms of stimulation applied to the ganglia of goats showed that irritation from the presence of certain bacteria within the cervical sympathetic ganglia may produce histologic pictures within the ganglia and in the thyroid which parallel those found in the various stages of progressive and regressive exophthalmic goiter. In Wilson's opinion this evidence supports the suggestion that in exophthalmic goiter the thyroid receives its stimulus to overfunction through its nerve supply and as a result usually of a local infection in the cervical sympathetic ganglia.

17. **Ectopic Contractions and Ventricular Preponderance.**—The electrocardiograms of 375 patients who presented some cardiac disturbance (a few were taken on patients in whom no cardiac lesion was suspected), were reviewed by Strauss. Thirty-six per cent. showed evidence of left ventricular preponderance and 10 per cent. showed evidence of right ventricular preponderance, while 2 per cent. showed an apparent change in preponderance at different times and under varying conditions. Premature contractions of all types occurred seventy-six times. In the sixty-three individual cases showing premature beats, eleven showed at least two different types while two cases showed origin in three different foci. Left ventricular premature beats were most frequent, right ventricular, auricular and junctional contractions occurring next in order in diminishing frequency. The greatest percentage of right ventricular preponderance showed right ventricular premature contractions, while the largest percentage of left ventricular preponderance showed ectopic beats arising in the left ventricle. From these facts Strauss deduces a possible etiologic theory to account for the relationship of preponderance and the origin of ectopic beats.

19. **Streptococcus Hemolyticus Reinfection.** — Clendening gives the incidence of *Streptococcus hemolyticus* reinfection in lobar pneumonia, measles and scarlet fever as it occurred at the base hospital, Fort Sam Houston: From Dec. 1, 1917, to March 1, 1918, there were admitted 319 cases of primary lobar pneumonia; forty-four became reinfected with *Streptococcus hemolyticus.* There were ninety-seven cases of empyema with thirty-two deaths. Eighteen of the deaths were due to the streptococcus. There were six cases of delayed resolution with four deaths; one case of lung abscess with profuse expectoration of evil smelling mucilaginous sputum which contained both pneumococci, streptococci and hemolytic streptococci. The patient recovered. Four patients had localized areas of persistent pulmonary infection but finally recovered. During this same period there were admitted to the hospital 716 cases of measles. Many of the cases of otitis media cultured had streptococci present. So also did certain of the tonsillitides, etc. In all there were about 150 cases of otitis; eighty-nine cases of bronchopneumonia (forty-two deaths); twelve cases of articular rheumatism, nonsuppurative, one case of suppurative arthritis, with general sepsis, and two cases of meningitis with general sepsis. All of these may be ascribed to *Streptococcus hemolyticus.* The complications known to be due to *Streptococcus hemolyticus* in measles were ninety-seven. In 134 cases of scarlet fever there were seven cases of streptococcus reinfection. Three of these were pneumonias, with one death.

The procedure now instituted at this hospital is to segregate every case of pneumonia, every case of measles and every case of scarlet fever for a twenty-four hour period. During this time a swab culture is made of the throat. When it has been determined by the laboratory whether or not the patient is a streptococcus carrier he is delivered to a proper ward. Prior to the determination of the presence of the streptococcus in the patient's throat he should have individual isolation—if possible in a room or a tent by himself; if not, then in a room with as few other patients as possible, separated from them so far as possible, and with the most rigid prevention of contact, by use of screens or sheets between beds. With an adequate number of single rooms in a receiving ward this could be accomplished there, it being the duty of the receiving officer to see that all cases are properly cultured and reported to the proper ward. In addition to this it may be necessary to culture the nonstreptococcus wards at various intervals, probably once or twice a week, as there will be some streptococcus carriers not detected on a single throat swab. Separation of beds by sheets is of course still necessary. The incidence of bronchopneumonia in measles by this method is considerably cut down. The result of separating streptococcus carriers with lobar pneumonia has entirely done away with streptococcus reinfections.

American Journal of Public Health, Boston

September, 1918, **8**, No. 9

21 Program of War Department Against Venereal Disease. W. F. Snow and W. A. Sawyer.—p. 639.
22 Protection Against Food Contamination. C. E. McCombs, New York.—p. 644.
23 Ice Cream Epidemics and Model Regulations for Control. H. W. Hamilton.—p. 651.
24 Feeblemindedness and Social Environment. P. H. Bryce, Ottawa, Ont.—p. 656.
25 Bacterial Examination of Green Vegetables. F. W. Kurk, Chicago.—p. 660.
26 Public Health Instructor—New Type of Health Worker. E. V. Brumbaugh, Milwaukee, Wis.—p. 662.
27 Some Public Health Lessons of War. E. C. Levy, New York.—p. 664.
28 Bibliography of Field Water Supply. J. J. Hinman, Jr., Iowa City, Iowa.—p. 668.
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Archives of Ophthalmology, New Rochelle, N. Y.

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31 Some Ocular Conditions Affecting Efficiency of Aviator. W. H. Wilmer.—p. 439.
32 Need of Ophthalmologic Clinic in Penal Institutions. The Clinic at Sing Sing Prison. C. Berens, Jr., New York.—p. 448.
33 Results from One Hundred and Twelve Wassermann Blood Tests in Missouri School for Blind. J. W. Charles and H. D. Lamb, St. Louis.—p. 455.
34 Case of Embolism of Central Retinal Artery in Chorea. A. Knapp, New York.—p. 459.
35 Histologic Findings in Eyeballs Lost Through Complications Following Sclerocorneal Trephining. W. G. M. Byers, Montreal.—p. 462.
36 Spasm of Accommodation. J. W. White, New York.—p. 466.
37 Report of Several Pathologic Pupillary Cases, with Especial Reference to what Constitutes a True Argyll Robertson Pupil. J. Dunn, Richmond, Va.—p. 469.
38 Cavernous Sinus Thrombosis; Report of Five Cases. D. Smith, Bridgeport, Conn.—p. 482.
39 Acute Streptothrix Infection of Conjunctiva. A. Knapp and J. G. Dwyer, New York.—p. 497.

Boston Medical and Surgical Journal

Oct. 10, 1918, **179**, No. 15

40 Treatment of Organic Heart Disease in Pregnancy and Labor. F. S. Newell, Boston.—p. 465.
41 Heart Lesions in Anesthesia. F. L. Richardson, Boston.—p. 470.
42 Normal Heart in Navy. G. F. Freeman, Boston.—p. 475.
43 Use of Roentgen Ray in Examination of Heart and Aorta. G. W. Holmes, Boston.—p. 478.

Delaware State Medical Journal, Wilmington

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44 Leukemia. J. W. James, Dover.—p. 5.

Illinois Medical Journal, Chicago

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45 Practice of Preventive Medicine. W. S. Sadler, Chicago.—p. 113.
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52 Civil Administrative Code of Illinois and Medical Practice Act. F. W. Shepardson, Springfield.—p. 146.
53 Exophthalmic Goiter. E. P. Sloan, Bloomington.—p. 155.
54 History of Illinois State Medical Society. G. N. Kreider, Springfield.—p. 158.
55 Treatment of Mercuric Chlorid Poisoning. B. Fantus, Chicago.—p. 159.
56 Prophylactic Use of Pituitary Extract in Nose and Throat Operations Under General and Local Anesthesia. S. Salinger, Chicago.—p. 164.
57 Relation Between Public Health, Tuberculosis and Medical Education. W. B. Metcalf, Chicago.—p. 169.

Journal of Experimental Medicine, Baltimore

October, 1918, **28**, No. 4

58 *Experimental Parotitis. M. Wollstein, New York.—p. 377.
59 Encystment of Dysentery Amebae in Vitro. K. Yoshida, Fukuoka Japan.—p. 387.
60 *New Nonpathogenic Tetragenous Ameba. S. Shimura, Fukuoka Japan.—p. 415.
61 *Rat and Poliomyelitis; Experimental Study. H. L. Amoss and P Haselbauer, New York.—p. 429.
62 Spirocheta Hebdomadis, Causative Agent of Seven Day Feve (Nanukayami). Y. Ido, H. Ito and H. Wani, Fukuoka, Japa —p. 435.
63 *Antimeningitis Vaccination: Agglutinins in Blood of Chror Meningococcus Carriers. F. L. Gates, New York.—p. 449.
64 *Origin of Tumors in Mice: V. Tumor Rate in Hybrid Strai A. E. C. Lathrop and L. Loeb, St. Louis.—p. 475.
65 Stability of Acid-Base Equilibrium of Blood in Naturally Neph pathic Animals and Effect on Renal Function of Changes this Equilibrium. I. Functional Capacity of Kidney Follow Anesthetic. W. deB. MacNider, Chapel Hill, N. C.—p. 501
66 Id.: II. Efficiency of Alkali to Protect Against Toxic Effec Anesthetic. W. deB. MacNider, Chapel Hill, N. C.—p. 51

58. **Experimental Parotitis.**—A new series of inoculat into cats of the *filtered sterile salivary secretions* der from cases of parotitis was made by Wollstein. They firm the observations made in 1915-1916 and confirm evidence of the filterable nature of the causative age mumps has been obtained. It has been determined tha saliva of man and of inoculated cats, and the inoc glands of the latter animals, contain the filterable, inf agent. The "virus" of parotitis was detected most r in the saliva during the first three days of the diseas easily on the sixth day, and not at all on the ninth d was detected also in the blood of patients showing constitutional symptoms, and in the saliva of a case of rent mumps at the periods of enlargement of the glands, but not two weeks after the swelling had s It was not detected in the cerebrospinal fluid.

60. **Nonpathogenic Tetragenous Ameba.**—In the s the amebas of dysentery Shimura discovered in the healthy persons a new type of tetragenous ameba like the dysentery ameba, forms a cyst contain daughter nuclei, but which differs from it in biol morphologic properties. Experiments made on ani clinical findings have demonstrated the nonpathog the new organism.

This ameba was observed by the author in six c is, in five persons with a normal condition of tl and in one having a chronic catarrh of the lar not dysenteric in character. In every instance t form of the ameba was found in the saline (diarrheal stools and the cyst *in the form* person failed to show any symptoms of a even after long purging; on discontinui evacuated normal dejecta and showed n illness.

61. **Rat and Poliomyelitis.**—The ce and other viscera of six rats, collecte bauer in a district in Greater New Y of epidemic poliomyelitis occurred, able of inciting, on inoculation, exp *Macacus rhesus* monkeys. The vi into the brain of white rats doe as four days in a form or in infection when inoculated intrac lure of the virus injec

)es not appear probable, therefore, that the rat acts in re as the reservoir of the virus of poliomyelitis.

. **Antimeningitis Vaccination.**—Following an outbreak of emic meningitis at Camp Funston, Kansas, in October and ember, 1917, a meningococcus vaccine suspended in salt ion was given subcutaneously as a prophylactic to about volunteers in three injections of 2,000 million, 4,000 on, and 4,000 or 8,000 million cocci at weekly intervals. e doses rarely caused more than the mildest local and ral reactions. Exceptionally a more severe reaction asized the presence of an unusual individual suscepti- to the vaccine. In such instances the symptoms were rt those of meningeal irritation and sometimes simulated onset of meningitis. Specific meningococcus agglutinins demonstrated in the blood serum of vaccinated men as pared with normal controls. Moreover, agglutinins were onstrated in the blood serum of chronic carriers of the ngococcus. Evidence is thus brought forward that the ive immunity of chronic carriers to epidemic meningitis be due to the presence of specific antibodies in the d stream.

Origin of Tumors in Mice.—The results of these inves- ions confirm the previous conclusion reached by Lathrop Loeb that in the majority of the crosses observed, the er rate is either intermediate between those of father nother strain, or that it follows the tumor rate of the t with the higher rate and only in a relatively small ıer of instances the cancer rate follows that of the at strain with the lower tumor rate. On the whole, the dity of cancer rate and cancer age follows the blending of hereditary transmission.

Journal of Immunology, Baltimore

May, 1918, 3, No. 3

- *Influence of Active Normal Serum (Complement) on Meningococci. I. Opsonic Activity of Fresh Normal Serum Alone and in Combination with Antimeningitis Serum for Meningococci. J. A. Kolmer, I. Toyama and T. Matsunami, Philadelphia.—p. 157.
- *Id. Bactericidal and Protective Value of Fresh Normal Serum Alone and in Combination with Antimeningitis Serum for Meningococci. T. Matsunami and J. A. Kolmer, Philadelphia.—p. 177.
- *Relation of Meningococcidal Activity of Blood to Resistance to Virulent Meningococci. T. Matsunami and J. A. Kolmer, Philadelphia.—p. 201.
- *Experiments on Production of Antipoliomyelitic Serum in Rabbits. E. T. H. Tsen, New York.—p. 213.
- Study of Problems of Immunity by Tissue Culture Method. I. Estimating Toxin and Antitoxin. M. T. Burrows and Y. Suzuki, St. Louis.—p. 219.
- *Id. II. Cells and Blood Plasma of Animals which are Naturally Resistant and Others which are Susceptible to Diphtheria and Tetanus Toxins. Y. Suzuki, St. Louis.—p. 233.

. **Opsonic Activity of Fresh Normal Serum.**—The phago- activity of antimeningitis serum was found most ked while the serum was fresh and active; after heating er the addition of 0.2 per cent. tricresol to a serum by standing at room temperature for four days or he phagocytic activity was diminished to a considerable due, presumably, to the loss of labile opsonin or Fresh normal human and guinea-pig serums defined amounts of opsonin for virulent menin- dilutions as high as 1:16 or 1:32; as a gen- serum has a higher opsonin content than The serums of different persons and found to vary to a slight extent in opsonic ition of fresh normal *human* or guinea-pig antimeningitis serums as prepared and stration, was found to definitely and opsonic activity for various strains of cerebrospinal fluid in meningococcus free of complement or contains but spinal fluid is always free of this ewise, of opsonin for meningococci the opsonic activity of antimenin- an index of its curative power, it conclude that fresh *normal* human lone may possess curative properties relation with meningococci and that the addition of either these normal serums and particularly fresh human serum to antimeningitis serum, as secured in the market, increases opsonic activity. It would appear worthy of clinical test to add 1 c.c. of fresh sterile human or guinea-pig serum to each 9 c.c. of antimeningitis serum, before intraspinal injection and particularly in the treatment of severe and serum resistant cases of meningococcus meningitis, for the purpose of increasing the phagocytosis of the micro-organisms.

68. **Bactericidal and Protective Value of Fresh Normal Serum.**—The bactericidal activity in vitro of different antimeningitis serums was found to be quite low. Fresh or active antimeningitis serums were somewhat more bactericidal than the same serums after inactivation by heating at 60 C. for thirty minutes. Active normal human and guinea-pig serums are generally slightly bactericidal for meningococci. The bactericidal activity of horse antimeningitis and normal human and guinea-pig serum, is largely independent of complemental bacteriolysis. The addition of active normal human and guinea-pig serum to antimeningitis serum sometimes increased the bactericidal activity of the latter. Whole human and guinea-pig blood found slightly more bactericidal than the serums alone. Normal human and guinea-pig serums frequently agglutinate meningococci in final dilutions up to 1:4, but not in higher dilutions.

Antimeningitis serums containing the largest amounts of agglutinin were found to possess most opsonin and apt to prove most bactericidal in vitro. Normal active *human and* guinea-pig serums were practically without demonstrable protective value in mice infected with virulent meningococci, although the addition of these normal serums to antimeningitis serum appeared in some experiments to slightly increase the protective power of the latter. Since it would appear that a large part of the curative properties of antimeningitis serum is to be ascribed to the presence of opsonin, it is suggested as worthy of clinical trial to *complement the antimeningitis* serum by the addition of active human or guinea-pig serum prior to intraspinal injection and particularly in the treatment of severe and serum resistant infections.

69. **Meningococcidal Activity of Blood.**—Bactericidal tests with a strain of virulent normal meningococci and the blood *of adult* white mice, adult rabbits and young and older guinea-pigs, have shown that the blood of rabbits possesses most bactericidal activity; the blood of old guinea-pigs was found somewhat more bactericidal *than the* blood of young guinea-pigs and white mice. The blood of young guinea-pigs was generally slightly more bactericidal than the blood of adult white mice. In the virulence tests consisting in the intraperitoneal injection of the same culture in graded doses and according to body weight, rabbits were found most resistant; young guinea-pigs were about as susceptible as adult *mice* while older guinea-pigs were somewhat more resistant than either.

The results of these experiments indicate therefore, that there is a general parallelism between *the* meningococcidal activity of the blood and resistance to meningococci and that at least one factor *in* natural immunity to the meningococcus is the presence of *bactericidal* substances in the blood. The results of these studies indicate that the meningococcidal activity of blood of *children is* somewhat less than that of adults; the bactericidal activity *of the latter is* comparable to the meningococcidal *activity of the blood* of mice and young guinea-pigs. It is probable that *certain* persons possess sufficient natural immunity to the meningococcus to afford protection *against meningitis* and it is highly desirable to discover a simple and accurate clinical test or measure of this resistance comparable to the Schick test for antitoxic immunity in diphtheria, as a *means for* encouraging active immunization with meningococcus vaccines; the bactericidal test as described while being simple and fairly *rapid* does not meet these requirements by reason of the possibilities of error and variation. though it possesses definite value as a strictly laboratory procedure *in special* investigations.

70. **Production of Antipoliomyelitic Serum.**—Rabbits could not be immunized with poliomyelitis virus to produce serum which could *restrain* or neutralize the effect of the virus

72. **Cells and Blood Plasma Resistant to Toxins.**—Suzuki has been able to show definitely that the natural immunity of rats for diphtheria toxin and chickens for tetanus is due to two factors—a special resistance of at least certain of the cells of these animals and further to the existence of neutralizing substances in their plasma. The plasma of these animals protects not only the cells of these animals against lethal doses of toxin but it also protects the cells of susceptible animals. So far heart muscle and ovary or in other words connective tissue cells have alone been studied. A sufficient number of experiments have not been made to give quantitative results.

Medical Record, New York

Oct. 12, 1918, **94.** No. 15

73 Treatment of Four Hundred Cases with Radium. R. Duncan, Los Angeles.—p. 617.
74 Juvenile Peripheral Gangrene in Infectious Diseases: Diphtheria. F. Robbins, New York.—p. 620.
75 Therapeutics of Phenylcinchoninic Acid. R. W. Wilcox, New York.—p. 625.
76 Unique Case of Rheumatism and Its Management. W. H. Porter, New York.—p. 627.
77 Modern Therapeutics in New York State Hospitals for Insane. S. L. Dawes, New York.—p. 629.
78 Mortality Statistics of Diabetes Among Wage Earners. L. I. Dublin, New York.—p. 631.
79 Origin of So-Called "Spanish Influenza" in the Pneumonic Plague of North China. J. J. King, New York.—p. 632.
80 Action of Chlorin on Suture Material. G. L. Servoss, Reno, Nevada.—p. 634.

Medicine and Surgery, St. Louis

June-July, 1918, **2.** Nos. 6-7

81 Ulcer of Stomach. M. E. Hehfuss, Philadelphia.—p. 603.
82 Effect of Disease of Lower Bowel on Rate of Emptying Stomach. F. W. White, Boston.—p. 618.
83 Developmental Exercises for Chronic Intestinal Invalid. J. Bryant, Boston.—p. 725.
84 Getting Results with Chronic Intestinal Invalid. J. Bryant, Boston.—p. 634.
85 Unusual Types of Diarrhea. T. R. Brown, Baltimore.—p. 640.
86 Carcinoma of Colon; Early Diagnosis. J. A. Lichty, Pittsburgh.—p. 646.
87 Endocrine Functions and Digestive Apparatus. L. F. Barker, Baltimore.—p. 655.
88 Fractional Analyses of Gastric Secretion in Ulcer of Stomach and Duodenum. J. Friedenwald and T. F. Leitz, Baltimore.—p. 679.
89 Pathology of Chronic Appendicitis. O. Klotz, Pittsburgh.—p. 687.
90 Fractional Study of Gastric Contents. G. W. McCaskey, Fort Wayne, Ind.—p. 693.
91 Case of Epigastric Tumor. J. C. Hemmeter, Baltimore.—p. 697.
92 History of Obstetrics from Earliest Times to Beginning of Seventeenth Century. F. E. Leavitt, St. Paul.—p. 707.
93 Treatment of Certain Hemorrhages of Uterus with Radium and Roentgen Rays. H. Schmitz, Chicago.—p. 714.
94 Vomiting of Pregnancy. F. L. Adair, Minneapolis.—p. 719.
95 Cervicitis and Vaginal Leukorrhea as Etiologic Factors in Neurasthenia and Hysteria in Women. A. R. Hollender, Linden, Wis.—p. 727.
96 Conservative Surgery in Operations on Fallopian Tubes with Reference to Future Pregnancies; Two Cases. F. Warner, Columbus, Ohio.—p. 731.

Military Surgeon, Washington, D. C.

October, 1918, **43.** No. 4

97 *Medical Work with American Expeditionary Forces. R. B. Osgood.—p. 369.
98 Foot Problem. T. S. Mebane.—p. 377.
99 *Empyema at Camp Lewis. E. W. Rockey.—p. 384.
100 *Communicable Diseases in National Guard and National Army During Six Months from September 29, 1917, to March 29, 1918. V. C. Vaughan and G. T. Palmer.—p. 392. To be continued.
101 History of Base Hospital, Camp Sherman, Chillicothe, Ohio C. A. Wood.—p. 445. Concluded.

97. **Medical Work with Expeditionary Forces.**—Osgood states that the three professional divisions therefore which are represented by their specialists in the combat divisions are genito-urinary, psychiatry and orthopedic surgery. If the cases reach the evacuation hospitals within ten or twelve hours of receipt of their wounds, it is possible to perform primary, delayed primary and secondary suture on nearly 90 per cent. The quick return of the wounded to the evacuation hospital, where the most skilled surgical service can be rendered, thus diminishes the surgery done in the field hospitals and limits it practically to emergencies only. The wounded men with fractures are coming back in splendid shape to the evacuation hospitals. Thus far the splinting has been excellent. In times of push of course the necessity of moving back cases very quickly prevents such a high percentage of early closures from being attained as is possible in times of comparative quiet.

When the cases can safely be removed from the evacuation hospitals, they go back either to the base hospitals of the advanced zone, the special hospitals of the advanced zone, or sometimes directly to the base hospitals of the intermediate and base zones. The special cases of bone and joint injury are segregated so far as possible and sent to special bone and joint hospitals. One is already established in the advanced zone and several others in the intermediate and base zones. In the advanced zone there are also special psychiatric and genito-urinary hospitals. From the base hospitals in the advanced zone, cases of amputation are sent to a special center and segregated. There the early treatment for weight bearing is begun. There are gradually being established, in orthopedic centers, curative workshops. A certain amount of very simple mechanotherapeutic apparatus is installed in these centers.

Every one who comes in contact with the severely wounded soldier, who has been through hardships and suffered and has emerged in a more or less crippled condition, recognizes the importance of beginning, as soon as possible, to combat the idea of crippledom and to awaken and foster a spirit of future usefulness. If at this stage the soldier can be given something to do with his hands and to occupy his mind as well, and he can come in contact with a simulating personality who is not a soldier and who will not talk battles with him, he gains comparatively quickly the conception of a possible wage-earning capacity and a return to a useful place in the body politic. He recognizes that his duty to the nation does not end with the end of his fighting and that his disability is a disability to be overcome.

99. *Empyema at Camp Lewis.*—Pneumococcus empyema was treated successfully at Camp Lewis by rib resection and simple drainage. From the progress of the yet incomplete cases (final results will be reported later), Rockey feels that the most efficient method of treating streptococcus empyema has been by thoracotomy, with constant negative pressure. This is shown by: (*a*) absence of mortality; (*b*) smooth postoperative convalescence, except in cases of too early removal of drainage tubes; (*c*) absence of pneumothorax, as proved by roentgen ray; (*d*) economy of materials and labor.

100. See Abstract No. 42, The Journal, Oct. 12, 1918, p. 1248.

Modern Hospital, St. Louis

September, 1918, **11.** No. 3

102 An Institution for Free Treatment of Tuberculosis Maintained by Modern Woodmen of America. J. A. Rutledge, Woodmen, Colo.—p. 155.
103 How American Red Cross in France Mends Mutilated Faces. K. De Moncios.—p. 158.
104 Health Insurance; Its Medical and Hospital Aspects. J. A. Lapp.—p. 160.
105 How to Build an Efficient General Hospital for Small Community. E. E. Bailey, Pittsburgh.—p. 165.
106 Some Problems of Hospital Management. H. E. Tuley, Louisville, Ky.—p. 169.
107 Hospital Accounting. C. A. Porter and H. K. Carter, St. Louis.—p. 173.
108 Life Saving Surgical Dressing Squads in France. C. H. Crawford.—p. 178.
109 New Experiment in Team Work for Public Health. C. Dinwiddie, Cincinnati.—p. 180.
110 Little Journeys to Places and People Worth Knowing. M. J. Robinson, Chicago.—p. 183.
111 Mental Hygiene and War. E. A. Prince, New York.—p. 196.
112 Trained Attendant. F. Dakin, Middletown, Ohio.—p. 198.

Nebraska State Medical Journal, Norfolk

September, 1918, **3.** No. 9

113 Complement Fixation in Tuberculosis. H. J. Lehnhoff.—p. 265.
114 Tuberculosis. A. K. Detwiler, Omaha.—p. 268.
115 Early Diagnosis of Cancer of Uterus. P. Findley, Omaha.—p. 272.
116 Nuclear Paralysis. F. F. Teal, Lincoln.—p. 276.
117 Treatment of Syphilis. C. C. Tomlinson, Omaha.—p. 277.
118 Roentgen Diagnosis of Carcinoma of Stomach, Colon and Rectum, A. F. Tyler, Omaha.—p. 280.
119 Carcinoma Head of Pancreas. A. Sachs, Omaha.—p. 283.

New Orleans Medical and Surgical Journal

October, 1918, **71**, No. 4

120 *Sodlium Citrate in Treatment of Pneumonia: Cases. W. H. Weaver, New Orleans.—p. 181.
121 Shell Shock—Psychoneurosis of War. C. S. Holbrook, Jackson. —p. 191.
122 Running Ear. G. J. Taquino, New Orleans.—p. 203.
123 Cross-Eyed Child Neglected. J. Hume, New Orleans.—p. 206.

120. **Sodium Citrate in Pneumonia.**—Weaver says that it is highly probable that some who have tried this treatment and have been disappointed in its results have not given the citrate in large enough doses. In an adult, 40 to 60 grains every two and a half to three hours, must be continued day and night until the lung has entirely cleared. If the citrate is discontinued before complete resolution there will be an immediate relapse. This relapse will again clear away under the influence of the citrate. This will be absolute proof that the citrate is responsible for the recovery by lysis. Thirty-six cases have thus far been treated and a rapid recovery has resulted in each instance.

New York Medical Journal

Oct. 12, 1918, **108**, No. 15

124 *Anti-Influenza Vaccine as Prophylactic. W. H. Park, New York. —p. 621.
125 Pathology of Prevailing Influenza *Pandemic*. D. Symmers, New York.—p. 621.
126 Clinical Aspects of Influenza. H. W. Berg and J. G. M. Bullowa, New York.—p. 624.
127 Treatment of Influenza. W. A. Bastedo, New *York.—p. 626.*
128 Concomitant Bronchoscopy and Esophagoscopy. S. Iglauer, Cincinnati.—p. 627.
129 Day Phantasies in Child. A. Stern, New York.—p. 628.
130 Spontaneous Pneumothorax in Pulmonary Tuberculosis. M. Kahn, Brooklyn.—p. 632.
131 Real Value of Fresh Air in Tuberculosis and Many Infectious Diseases. C. Gluck, New York.—p. 632.
132 Improving Sight of Soldiers and Sailors and Relieving Pain. W. H. Bates, New York.—p. 639.

124. **Anti-Influenza Vaccine as Prophylactic.**—Park says that as the investigations have proceeded in Boston, New York, and elsewhere, it has become more and more probable that the primary cause of the disease is the influenza bacillus and that the complicating infections, due to the streptococci and pneumococci, are superimposed. It is fair to assume that the strain of the influenza bacillus responsible for this epidemic is an especially virulent one differing somewhat from the strains previously in Park's midst. The streptococci and pneumococci may be communicated from the sick with the influenza bacillus or they may have been present for some time before the attack. The influenza bacilli have been found in almost every case of clear cut infectious influenza. In the complicating pneumonias, they have been found associated with either the streptococci or pneumococci. In one case the bronchopneumonia was due entirely to the influenza bacillus. The results of the Department of Health of the City of New York, in fact, have closely agreed with those reported from the United States Naval Hospital at Chelsea, Mass., by Dr. J. J. Keegan, in THE JOURNAL, Sept. 28, 1918.

Southwestern Medicine, El Paso, Texas

August, 1918, **2**, No. 8

133 Syphilitic Aortitis. R. E. Thomas, Phoenix, Ariz.—p. 1.
134 *Public* Health and War. W. O. Sweek, Phoenix, Ariz.—p. 8.
135 Trench Fever. G. Werley, El Paso.—p. 11.
136 Paralysis of Recurrent Laryngeal Nerve Associated with Pulmonary Tuberculosis. A. D. Wilson, Prescott, Ariz.—p. 14.
137 Cheiloplasty of *Lower Lip* for Neglected Carcinoma. V. A. Smelker, Nogales, Ariz.—p. 17.

FOREIGN

Titles marked with an asterisk (*) are abstracted below. Single case reports and trials of new drugs are usually omitted.

British Medical Journal, London

Sept. 21, 1918, **2**, *No. 3012*

1 Nature and Symptoms of Cardiac *Infection* in Childhood. F. J. Poynton.—p. 305.
2 *Association of Rickettsia Bodies in Lice with Trench Fever. J. A. Arkwright, A. Bacot and F. M. Duncan.—p. 307.
3 *Work of Department for *Employing Expectant* Mothers in Munition Factory. R. H. B. *Adamson and H.* Palmer-Jones.—p. 309.
4 Three Fatal Cases of B. Aertrycke Infection. A. J. *Jex-Blake* and W. J. Wilson.—p. 310.
5 Ventral Hernia; Use of Filigree to Strengthen Abdominal Wall. H. H. *Greenwood.*—p. 312.
6 *Boot Heels as Cause of Flatfoot, Soldier's Heart, Myalgia, etc. S. D. Fairweather.—p. 313.

2. **Rickettsia Bodies in Lice and Trench Fever.**—The constant presence, after a suitable lapse of time, of rickettsia bodies in lice which have been fed on a trench fever patient has been confirmed by Arkwright and Duncan. The absence of rickettsia bodies from lice bred in captivity and fed only on healthy men has been shown by them. A very close correlation has been shown to exist between the presence of rickettsia bodies in lice or the excreta of lice and the virulence of these materials when inoculated into men.

3. **Employing Expectant Mothers in Munition Factory.**—Since the outbreak of the present war the numbers of married women of child-bearing age who have entered into industrial employment have steadily increased. Apart from the necessity for engaging in well paid work experienced by these women, various industries have discovered that these married women are valuable servants, who are reliable workers in different processes and who cannot always be replaced by satisfactory substitutes if they leave work. Up to a recent date there has been no fixed routine of procedure in dealing with women factory employees who have become pregnant. In some instances the condition has been ignored and the woman has been allowed to work at any process as long as she has wished to do so without any regard to the suitability of the work on which she is engaged. In other cases the custom has been to dismiss an expectant mother directly her condition becomes apparent regardless of the question of her ability to work to a later date.

The prematernity scheme in Leeds was opened for the transfer of women in April, 1918. The women themselves apply at each factory to their welfare supervisor to be enrolled for employment under the scheme. They fill in a form of application, and sign an agreement to accept the wages offered for this class of work. This form is forwarded to the lady superintendent in charge of the scheme, who notifies the factory medical officer of the applications. The factory medical officer examines all applicants as soon as possible, and sends in a report on them as to date and number of pregnancy, date of expected labor, complications if any, and the grade or work for which they are then suitable, and the desirable dates for transfer to lighter work. From this tabulated list of applicants the lady superintendent of the scheme is able to transfer women to their special work as they become eligible provided there is a vacanacy by the delivery of women further advanced in pregnancy working under the scheme. Women on becoming pregnant are very adversely affected by night work apart from any degree of heaviness. For this reason the aim of the scheme is to place expectant mothers on day work only as a routine at the end of the fourth month of pregnancy, and sooner than this date if there is a complaint of great discomfort due to night work. As soon as these women notify their pregnancy, even though they have not reached the end of the fourth month, they are removed from any work involving heavy lifting or sudden strain.

On reaching the end of the fourth month of gestation, or earlier if there is any medical reason, these women are transferred to light sedentary work at a factory engaged in the gaging and assembling of fuse parts. They work from 7:30 a. m. till 5:30 p. m., with the usual factory breaks for meals. They are given the less skilled operations in this factory, as it is not worth while devoting much time to teaching them any work at which they will be employed only a few months. They are paid at the ordinary standard rate for their work. At the end of the seventh month, or earlier if there is any medical reason, these women are transferred from the fuse factory to a department which for convenience is described as the general clothing store and sewing dépôt. Here they work from 9 a. m. till 5 p. m., with breaks for meals as in the factory. They are engaged on the making and mending of the overalls, caps, trouser suits, gloves, etc., supplied by the factory management for the use of their workers. The last hour of the day is given up to the making of clothes for the baby under the help and guidance of the sewing dépôt forewoman. They are encouraged to lie down in the rest room during part of their dinner hour, and at any time if they are temporarily indisposed. The women make their own arrangements for attendance during confinement. They may remain at work until labor begins, if they wish to do so.

6. **Boot Heels Cause of Flatfoot, Soldier's Heart, etc.**—In a normal barefooted man the balance of the body is so perfect that practically no effort is required to keep erect. The weight rests on the heels and outer sides of the feet, not on the arch or inner sides of the feet. Fairweather says that if the heels are raised from the ground by boot heels even a quarter of an inch thicker than the soles the outer side of the foot is removed from the ground and the weight falls on the arch. The center of gravity is also thrown forward, and in a man of 5 feet 7 inches the head is thrown 9 inches off the vertical by a heel three-quarters inch high. To remedy this, and to prevent falling forward, the back muscles and the extensors of thigh and foot come into action. The peroneus longus and brevis, while extending the foot, also evert it, and the tibialis anticus, which supports the arch and inverts the foot, gets elongated and ceases to act. A soldier, 5 feet 7 inches, weighing 154 pounds, and wearing a heel three-quarters inch thicker than the sole, has to exert strength enough to be constantly lifting 56 pounds, from the ground in trying to retain his balance. In a man loaded with 60 pound equipment this means that he has to support to 116 pounds, nearly doubling the weight he is supposed to carry.

Fairweather is convinced that this is doubtless one factor in the etiology of soldier's heart, as every heart, even if healthy, is not equal to this strain. To preserve the lumbar curve without overtaxing the back muscles women are obliged to use corsets. The use of waist belts by men is similarly explained. The waste of neuromuscular energy in retaining an erect posture when wearing heels is vary great, and must play a large part in producing hysteria, neurasthenia, and possibly refraction troubles. Heels are also partly responsible for hammer toes, the long flexors of the toes being supplied by the same nerve as the calf muscles, and getting spastic with them. Fairweather thinks sprained ankles, the stoop of old age, asthma, varicose veins, weak back, and spinal curvature may also be partly due to the effect of heels.

A rational boot should have the soles and heels of the same thickness. Under the arch of the foot the sole should be curved with a convexity upward, but not so convex as to cause pressure on the sole. The leather could be reinforced by spring steel from the heel to the ball of the foot. The inner edge of the boot should be straight, so as to allow the big toe to be in line with the inner side of the arch, as in American boots. In hopeless cases of flatfoot a boot with no heel will at least be more comfortable than the present day boot. The spastic calf muscles will not relax immediately the boot heels are discarded, and consequently at first some awkwardness will be felt in walking. Very soon, however, the tibialis anticus develops, the ankles get stronger, the legs straighter at the knees, the foot gets shorter as the arch recovers, and any tendency to eversion disappears. The figure gets more erect, the chest capacity increases, and walking becomes a pleasure, and as the neuromuscular energy (wasted in neutralizing the forward tilt caused by boot heels) becomes conserved, the health, strength and stamina improve.

Dublin Journal of Medical Science

August, 1918, **146**, No. 560

7 *Clinical Report of Rotunda Hospital, November, 1915, to October, 1916.* W. Smyly, R. D. Purefoy and E. H. Tweedy.—p. 49.
8 Relation of Consciousness to Sympathetic System E. Wooton.—p. 60.

Glasgow Medical Journal

August, 1918, **90**, No. 2

9 Trinitrotoluene Poisoning; Five Cases. A. W. Gregorson and F. E. Taylor.—p. 65.
10 Polioencephalitis and Epidemic Disease of Obscure Origin. R. M. F. Picken.—p. 81.
11 Outbreak of Acute Febrile Disease in Three Factories and Industrial School in Glasgow. A. Maclean.—p. 84.
12 Vitiligo; Four Cases. A. W. Harrington.—p. 87.

Journal of Tropical Medicine and Hygiene, London

Sept. 16, 1918, **21**, No. 18

13 Dengue-Like Fever in Dutch Guiana. C. Bonne.—p. 189.

Lancet, London

Sept. 21, 1918, **2**, No. 4960

14 *Prevention and Arrest of Lice-Borne Diseases by New Methods of Disinfection. W. Hunter.—p. 377.
15 *Combined Embarkation and Boat Distribution Scheme. H. Hemsted.—p. 382.
16 Case of Sudden Death After an Anesthetic in Latent Case of *Shell Gas Poisoning.* P. Turner.—p. 384.
17 *Typhus. Weil-Felix Serologic Test. C. M. Craig and N. H. Fairley.—p. 385.
18 *Intestinal Protozoal Infections. D. L. Mackinnon.—p. 386.

14. **Lice-Borne Diseases and Disinfection.**—Hunter describes in detail the use and construction of two new types of Van disinfectors, following this up with the results obtained in Serbia and in Saloniki as he has already done for the Egyptian campaign.

15. **Embarkation and Boat - Distribution Scheme.**—The object of Hemsted's scheme is to segregate patients on embarkation according to diseases, nationalities, ports of debarkation, etc., and to furnish each man immediately with a ticket for his life boat. The Graphic System is adopted and works admirably.

17. **Typhus: Weil-Felix Serologic Test.**—Craig and Fairley claim that this agglutination test is an invaluable aid in the diagnosis of typhus. Frequently the reaction appears only in the disease, and, as a rule, rapidly increases in titer. A rapid agglutination in a dilution of 1/10 on Garrow's agglutinometer, while not absolutely reliable, is sufficiently suspicious to justify the isolation of the case. This is especially true of persons uninoculated with T. A. B. or cholera. The serum of fifty uninoculated natives failed to give a reaction even in a dilution of 1/10. If the test be repeated at intervals of two days confirmatory evidence will, in the great majority of cases, be obtained. This test is particularly valuable in the case of natives in whom it may be difficult to distinguish clinically between severe relapsing fever and typhus.

18. **Intestinal Protozoal Infections.**—From May, 1917, to March, 1918, 1,680 cases (914 dysenterics and 766 nondysenterics) were examined by Mackinnon for intestinal protozoa. Only 131 had less than six examinations. Thirty-four patients had never been out of England. The rest, with very few exceptions, came from France. But it was found that 447 had at some time been in tropical and subtropical countries. Eight hundred and sixty-four, or 51.4 per cent., were infected with protozoa. *E. histolytica* was found in 209 cases, *E. coli* in 440, *E. nana* in 303, *Giardia intestinalis* in 226, *Chilomastix mesnili* in 85 and *Trichomonas hominis* in 13. The 914 dysenterics yielded 123 carriers of *E. histolytica;* the 766 nondysenterics yielded 86. Among 447 persons (dysenteric and nondysenteric) who had been in the East, 72 were infected with *E. histolytica;* of 1,233 persons from England, France and northern Italy, 136 were infected. Two hundred and eighty dysenterics who had been in the East had among them as many as 56 carriers, whereas 634 French and English dysenterics yielded only 67. Of 131 carriers who were treated for twelve days with emetin bismuth iodid, 69 relapsed after a first treatment. Of 16 who went on to further treatment, 8 were eventually cleared. At least 58 per cent. of the relapses took place in the first week. Observations on 5 cases of *lamblia* dysentery treated in France with methylene blue and declared free of the organism do not suggest that this is an effective treatment.

Medical Journal of Australia, Sydney

Aug. 31, 1918, **2**, No. 9

19 *Conditions Found in Amputation Stumps.* A. T. H. Nisbet.—p. 173.

Sept. 7, 1918, **2**, No. 10

20 Organization and Surgery of Military Orthopedic Hospitals with Special Reference to Nerve Surgery. L. G. Teece.—p. 197. To be continued.
21 Treatment of Phthisis by Means of *Paratoluene-Sodium-Sulfchloramin* (Chloramin-T). F. W. Waters.—p. 200.

Sept. 14, 1918, **2**, No. 11

22 Associated Study of Clinical and Macroscopic and Microscopic Appearances of Carcinomatous Tumors of Breast. H. C. Rutherford-Darling.—p. 217. To be continued.
23 Organization and Surgery of Military Orthopedic Hospitals, with Special Reference to Nerve Surgery. L. G. Tecce.—p. 219.

Archives des Maladies de l'Appareil Digestif, etc., Paris

May, 1918, **9**, No. 12

24 *Intestinal Bilharziasis. P. Carnot.—p. 661.
25 *Digestive Activity of the Stomach. L. Meunier.—p. 683.
26 *Cancer of Upper Esophagus. E. Cottin and C. Saloz.—p. 689.
27 Colon Reactions. F. Moutier.—p. 697.

24. **Intestinal Bilharziasis.**—Carnot gave daily enemas of thymol in an oil emulsion and gave thymol also by the mouth, with good results in the two cases reported.

25. **Test for Strength of Gastric Digestion.**—Meunier has the patient swallow a pearl of ether, enclosed in a little rubber bag, the neck of the bag tied with a cord of some substance which is digested by gastric juice. When this cord yields to the digestive juices, and the sac thus spreads open, the ether escapes and the patient belches. The length of the interval that elapses between the swallowing of the pearl and the characteristic eructation is an index of the strength of the digestive forces. He used catgut at first to tie the sac, but found *filandre* cord better for the purpose. This *filandre* is made like ordinary catgut from the small intestine of sheep, but whereas catgut is made from the third layer, next the mucosa, the *filandre* is made from the second, the purely muscular tissue layer. This permits more even digestion. The ether pearl is tied in the center of a disk of thin rubber tissue, about 3 cm. in diameter. This is drawn up and held by a fine elastic drain, the ends of which are tied together with the strip of *filandre*. As this yields to digestion by the gastric juice, the ether pearl falls out; as it bursts, the patient feels a peculiar sensation and belches the ether. Taken with an Ewald test meal, the ether eructation occurs in normal conditions in fifty or sixty minutes. Meunier is convinced that the findings with this test are more exact and reliable than with chemical tests, as the latter require the stomach tube, and the information derived from it applies only to that special moment. A series of intubations would be instructive, but this would certainly modify the motor functioning of the stomach and thus secondarily modify gastric secretion. The ether pearl, on the other hand, swallowed with the meal, undergoes digestion along with the food, and gives the warning signal only when the digestion has reached a certain stage. It is thus a true physiologic index.

26. **Cancer of Upper Esophagus.**—Cottin and Saloz remark that the laryngeal form of cancer of the esophagus is the one hardest to diagnose. The dyspnea, the attacks of suffocation, point to the air passages. The intense pain from pressure on the brachial plexus and sympathetic nerve may suggest angina pectoris, while the partial or total aphonia or dysphonia suggest primary laryngeal disease. The diagnosis generally has to be made by exclusion. In a case described, spasms of coughing and of increasing dyspnea were the only symptoms at first. In four months the voice was bitonal, and eating brought on paroxysms of coughing. There was paralysis of the left recurrent nerve, and the disturbances were attributed to this at first, but, by exclusion, the attention was finally focussed on the upper esophagus, and necropsy confirmed the assumption of malignant disease at this point.

Bulletin de l'Académie de Médecine, Paris

Aug. 13, 1918, **80**, No. 32

28 *Influenza. F. Bezançon.—p. 158.
29 *Scarlatinal Endocarditis. P. Nobécourt.—p. 162.
30 Polymicrobian Antigonococcus Vaccine. G. Baril.—p. 164.

28. **Influenza.**—Bezançon states that the pneumococcus is decidedly the predominant microbe in the prevailing epidemic of influenza at Paris. The frequency and the severity of the bronchopulmonary complications are striking, and also the number of cases of zona that have followed it. In one hospital there were over twelve cases of influenzal herpes zoster in one month.

29. **Scarlatinal Endocarditis.**—Nobécourt ascribes to secondary infections the ulcerative and vegetative forms of endocarditis in scarlet fever. The scarlatinal virus alone induces a simple nonulcerative endocarditis, and this is the more common. Among the soldiers he encountered it in 2.5 per cent. of 278 cases of scarlet fever. The heart was affected, as revealed by auscultation, in 38.5 per cent. of the cases of scarlatinal rheumatism in soldiers. As a rule, scarlatinal endocarditis tends to recovery, the auscultation findings becoming normal once more. It passed into a chronic phase only in two of seven cases in soldiers. The myocardium seems to be left with a tendency to ready dilatation later. Tardy tachycardia is not infrequent. The endocarditis of scarlet fever is thus closely analogous to that of acute rheumatism. With both there are liable to be acute polyarthritis, pericarditis, etc., and, in children, chorea.

Bulletins de la Société Médicale des Hôpitaux, Paris

June 28, 1918, **42**, No. 23

31 *Tuberculosis of the Heart. Braillon.—p. 668 and p. 669.
32 *Serodiagnosis of Spirochete Jaundice. Martin and Pettit.—p. 672.
33 *Aortic Insufficiency. F. Trémolières and L. Caussade.—p. 675.
34 *Oliguric Heart Disease. O. Josué and M. Parturier.—p. 682.
35 *Latent Microbism. Bergeret and Botelho.—p. 688.
36 *Lethargic Encephalitis. P. Halbron and Coudrain.—p. 692.
37 Diaphragmatic Hernia. L. Giroux.—p. 695.
38 *Epilepsy. Mirallié.—p. 697.
39 Paratyphoid A. De V. de Lavergne and C. Gautier.—p. 700.

31. **Tuberculous Heart Disease.**—Braillon comments on the clinical picture of subacute tuberculosis of the endocardium, the valvular disturbance, mitral rhythm and progressive asystole, in young subjects, with a febrile temperature during the months before death, the fever of the tuberculosis type. The clinical picture differs essentially from that of streptococcus protracted endocarditis, and animals inoculated with blood developed tuberculosis in the two cases analyzed (both previously published).

He discusses further the simple endocarditic phlegmasia, with tubercle bacilli, which is the form of cardiac tuberculosis that develops in the resistant or with mild infection. Under other conditions, the bacilli are arrested in the capillaries and the miliary form of tuberculosis develops from the specific embolisms. In short, he concludes, tuberculosis must be regarded as a cause of chronic heart disease, possibly of as much importance as acute rheumatism and syphilis.

32. **Agglutination Test for Spirochete Jaundice.**—Martin and Pettit report that the Widal test applied to human icterohemorrhagic spirochetosis during the last six months has given conclusive findings from the clinical standpoint. Normal and syphilitic serums have never to date agglutinated these spirochetes, while the course of the case, the spirocheturia and inoculation of guinea-pigs confirmed the positive findings. The earliest date in which the agglutination test proved positive was the tenth day, but the agglutinins long persist in the blood, up to twenty-two months to date in one case, still agglutinating at 1:1,000. The immunisins do not appear till the fifteenth day.

33. **The Murmur of Aortic Insufficiency.**—In 50 per cent. of 82 men with aortic insufficiency examined, the murmur was heard in the left second and third interspaces, and only in 11 in the right second interspace; in 20 at the sternum; in 9 at the xiphoid appendix and once toward the apex. The cases in which it was heard at the left were all recent ones. With an old aortic lesion, the diastolic murmur is heard on the right side, and radioscopy shows hypertrophy of the left ventricle with dilatation of the right cavities and deviation of the axis of the aorta upward and toward the right. The mechanism of this is explained with diagrams. In the recent cases, with left murmur, the left ventricle is simply hypertrophied, the aorta still vertical. In a little more advanced stage, the murmur is heard at the sternum, and the aorta has begun to slant toward the right.

34. **Oliguria of Cardiac Origin.**—Josué and Parturier report a typical case which confirms that myocarditis is able, alone, to induce oliguria with such retention of fluids in consequence that there is pronounced dropsy. The latter resembles that of renal origin, but the kidneys are sound. The trouble is

merely that the heart cannot pump the fluid to the kidneys in sufficient amounts. A drop in the output of urine is the capital symptom which should suggest a failing myocardium. Even if the kidneys are diseased, the heart may be mainly responsible for the oliguria. The proof for these assertions is provided by the rapid subsidence of the dropsy under digitalis alone.

35. **Latent Microbism.**—In one of the two cases described, latent infection in a war fracture flared up two years after it had healed. The staphylococcus and an anaerobic streptococcus were responsible for it. In the second case the interval was twenty-three months, and the staphylococcus and streptococcus found were facultative anaerobes.

36. **Lethargic Encephalitis.**—The aviator of 26 was taken suddenly with headache and torpor. The somnolency was almost continuous, and strabismus and ptosis varied from day to day. For a few days there was hemiplegia and one day clonic movements, but no fever at any time. Lumbar puncture showed limpid fluid, apparently normal except for slight lymphocytosis. The symptoms gradually subsided and complete recovery now impends; the tendency to somnolency persisted for eighteen days, with intermittent headache.

38. **Epilepsy.**—Mirallié insists that salt should be discarded absolutely as also tea, coffee and alcohol. Then the doses of bromids can be materially reduced, and such improvement may then be realized that it amounts to an actual cure. He gives a moderate dose of the bromid every day, without interruption. When his patients go thus two or three years without a seizure, he reduces the dose of the bromid, but emphasizes that absolute abstention from salt is the main thing. In his first series of 181 cases, only 83 followed his instructions. At that time he ordered merely restriction of salt. In 12 cases the results were negative; in 18 there was improvement and 53 had no further seizures. Since 1912, 52 of a later series of 133 cases followed instructions, and 31 have had no further seizures and 18 have been much improved; more or less benefit has been realized in all but 3 cases. Of 10 men in one institution, all were improved and 5 apparently cured, as also 9 of the 12 women, all showing marked improvement. The youngest of the clinically cured was 7, the oldest 63 years of age. The seizures in one case had been frequent from the age of 7 to 37, but there have been none since this treatment was instituted. The best results were realized in families in which the mother did the cooking, and she was able thus to keep all salt out of the bread, the butter, etc. When this was left to servants, the salt was not banished so rigorously. Full success was realized only in the cases with absolute abstention from salt, tea, coffee and alcohol. Sugar, pepper, vinegar and lemon juice were allowed freely. The benefit was prompter and more pronounced in persons who had previously used much salt. The other symptoms of epilepsy were not modified so early as the actual seizures. The diet, except for the salt and stimulants, can be varied and liberal, but must be served entirely without salt. The failures were always in the wealthy homes.

Journal de Radiologie et d'Electrologie, Paris

March-April, 1918, 3, No. 2. Pub'd August

40 *Mute Tuberculous Cavities in Lung. J. Aimard.—p. 49.
41 *Roentgen Examination of Spondylitis. Péhu and Daguet.—p. 53.
42 *Localization of Deep Projectile. L. Patte.—p. 57.
43 *Bulletin of Radiologic Service.—p. 65.

40. **Mute Tuberculous Cavities.**—Aimard gives the roentgen findings in a number of cases in which there was nothing to suggest a cavity in the lung otherwise. A silent cavity in the left lung is usually at the apex; in the right lung it may be found at the apex, base or middle of the lung. When the outline is distinct, in clear lung tissue, the cavity is of a fibrous type. An active cavity may show a hazy outline in the midst of infiltration. The outline of an arrested cavity usually grows more and more indistinct until the outline quite disappears. With sclerosis and consequent deformity of the superior interlobe, a shadow may be cast suggesting the floor of a cavity, ribs aiding to form an outline resembling that of a tuberculous cavity at the right apex.

41. **Deforming Spondylitis.**—Roentgen study of six cases seems to show that chronic spondylitis with tendency to ankylosis, and rhizomelic spondylosis seem to be different forms of chronic rheumatism. The two dorsal and first two lumbar vertebrae are usually first and predominantly affected.

42. **Localization of Deep Projectile.**—The method described is based on the use of a small diaphragm and measured rotation of the tube.

43. **Army Roentgen Bulletin.**—This section contains reports of a number of cases interesting from the roentgen standpoint, and a number of modifications in roentgen technic worked out by radiologists in the service. They include twin tubes for locating projectiles, a pedal control for rotating the tube, a simplified table for roentgen work, supplementary diaphragms, etc.

Paris Médical

Aug. 3, 1918, 8, No. 31

44 *Lethargic Encephalitis. A. Netter.—p. 81.
45 *Meningococcemia. P. Sainton.—p. 86.
46 Partial Tetanus. G. Étienne.—p. 91.
47 *Malaria and Malariosis. Aynaud.—p. 95.
48 Colloidal Gold in Paratyphoid. Fortineau.—p. 97.
49 General Vaccination against Typhoid. H. Alliot.—p. 100.
50 Poliomyelitis in the United States. G. and J. Blechmann.—p. 105.

44. **Epidemic Lethargic Encephalitis.**—Netter gives a detailed history of this disease which he has encountered in ten adults and four children in his private practice and in six children in his service in a children's hospital. In the 105 cases in England, sixty-four were in adults, over 20, and only fifteen were in children under 10. He insists that the clinical picture is not that of a food intoxication nor of a special form of influenza nor of poliomyelitis. He reiterates that it is a *maladie autonome*, the specific agent of which is endowed with an affinity for the nerve centers. The epidemic began simultaneously in France and in England late last January. The normal findings in the cerebrospinal fluid are important for the diagnosis. All the features of the present epidemic are found in the accounts of an epidemic at Vienna in the winter of 1916-1917. An apparently similar epidemic was reported in the *Medical Journal of Australia*, March, 1918. In comparison with poliomyelitis, the mortality is greater, but integral recovery is more common than with poliomyelitis; the cerebrospinal fluid is more nearly normal. In poliomyelitis, he says, the symptoms are almost exclusively bulbar and protuberantial, and the nerve cells are found more pathologic, although the microscopic changes are not essentially different in the two diseases. In treatment he relies on hexamethylenamin, giving 1 or 2 gm. in the twenty-four hours. He has had no opportunity yet to give intraspinal injections of convalescent serum such as have proved effectual in poliomyelitis.

45. **Meningococcemia.**—Sainton describes seven different forms which meningococcus infection of the blood may assume: the fulminating or subacute form, the typhoidal, pseudomalarial, eruptive, articular and metastatic form, and the abortive forms. Herpes is frequent in meningococcus infection. In dubious cases the turbid spinal fluid may give the clue even in the absence of meningeal manifestations. In one case described, the meningococcemia dated from May 6, but meningitis did not develop till July 14. The danger of contagion of others in such a case is obvious. In the pseudomalarial form, the man may come and go freely during the free period between attacks, and thus sow the germs broadcast. Intravenous injection of antimeningococcus serum seems the logical treatment, but there is sometimes a dramatic reaction that might prove fatal. Artificial respiration, venesection and injection of ether were all that saved one of Sainton's patients in such a case. Similar experiences have been reported by Netter and by Marie, so that the intraspinal or subcutaneous route seems preferable.

47. **Malariosis.**—Aynaud warns that the suggestion exerted by actual injury from an accident or actual malarial disease, plus the talking it over with one's mates, may generate a state of mind in which the accident or the malaria—any accident, any malaria—is regarded as synonymous with indemnity. Soldiers who have had malaria and who get this

"malariosis" are all convinced that they have the absolute right to be exempted from further service to the end of the war, and to be supported after the war. When they are dismissed from the hospital they are told to keep on taking quinin. This means, they think, that they are not cured. If not cured of a disease contracted in the service, then they have a right to be taken care of. At present all they demand is exemption from further service, but the day that peace comes they will claim a pension for disability contracted in the service, and they will present a bunch of hospital cards, etc., with mention of malaria, anemia, etc., often written merely at the man's own dictation, without special examination. Army medical officers must beware of breeding this "malariosis" with its train of pensions and life-long loafing. Men with malaria should be under the care of experts in malaria, and when dismissed they should not be told to continue taking quinin. Every time a man with malariosis comes into the hands of a physician who is not a malaria specialist, the man returns to the hospital for a course of treatment, and always he seeks a different hospital. Malariosis is becoming seriously prevalent, and both medical and military measures are necessary to stamp it out.

Presse Médicale, Paris

Aug. 29, 1918, **26**, No. 48

51 *Access to Heart. P. Duval and H. and P. Barasty.—p. 437.
52 *Clinical Tests of Labyrinth. H. Piéron.—p. 439.
53 *General Anesthesia by Intubation. Guisez.—p. 441.
54 Histochemical Constitution of Pus. A. Demolon.—p. 443.
55 Mercury-Lead Plaster. L. A. Longin.—p. 445.

51. **Median Pericardotomy.**—Duval and Barasty show with illustrations the various methods of access to the heart and the large vessels at the base of the heart. They expatiate on the advantages of a median technic with which the upper end of the sternum is cut across and the body slit lengthwise. The incision is thus in the shape of a T, but the access thus afforded to the mediastinum and upper abdomen is surprisingly extensive as the halves of the sternum are turned back. This bone is of such a spongy nature that it grows together at once without suture, so that this median thoraco-abdominal pericardotomy seems to be the best means of access to this region.

52. **Clinical Tests of Labyrinth Functioning.**—Piéron cites the general laws which govern labyrinth functioning, and describes the mechanism and interpretation of the findings in different pathologic conditions.

53. **General Anesthesia by an Intratracheal Tube.**—Guisez remarks that the advantages of administering the anesthetic through a rubber tube are so great that it has proved possible to materially modify the technic of operations on the face and neck. He has applied it in 330 cases, and there has never been the slightest by-effect from the intubation. An olive tipped sound, No. 26 to No. 30, is introduced by one skilled in direct laryngotracheoscopy, the patient under the influence of a few whiffs of the anesthetic. A spinal spring is wound around the sound where it passes between the teeth, and the sound is pushed in about half way down the trachea. A string fastened to it and tied around the neck holds it in place, and a sponge is packed around it in the nasopharynx. As there is no possibility of blood and secretions getting into the air passages, there is no need to hold the head far back. One unexpected advantage of this technic is the absence of postoperative nausea and vomiting. Only six of the 330 patients had any tendency to vomiting, and in these it was slight; the preoperative first whiffs of the anesthetic were probably responsible for it. These experiences demonstrate that postoperative vomiting cannot be ascribed to a toxic action on the liver. It seems more rational to ascribe it to swallowing of chloroform fumes and of saliva saturated with them. When this is prevented, there is no vomiting. Under the influence of any toxic gas, constant swallowing movements are kept up, asleep or awake, and the swallowed air and fumes amply explain the distension of the stomach walls and irritation of its mucosa. In the gassed, he has found evidences all along in the esophagus of toxic action from the swallowed gas. All of which confirms his assumption that by this intubation technic, preventing all swallowing, we can ward off postoperative nausea and vomiting in the majority of cases, outside of damaged liver and kidneys.

Policlinico, Rome

Aug. 18, 1918, **25**, No. 33

56 *Adhesive Plaster Treatment of Wounds. C. Mancini.—p. 773.
57 Campaign against Malaria. D. Falcioni.—p. 777.

Aug. 25, 1918, **25**, No. 34

58 Secondary Arterial Hemorrhage. S. Tarantino.—p. 797.
59 Sending Blood for Examination. Domenici.—p. 800.

56. **Adhesive Plaster as Dressing for Wounds.**—Mancini relates that three years' experience has convinced him of the advantages of applying narrow strips of adhesive plaster directly to wounds. They heal under this dressing much faster and better than under gauze dressings, even when the gauze can be kept constantly moist. The strips of plaster are cut long enough to extend for some distance on each side of the wound, and they are drawn tight and pressed down on the wound. Under this combination of pressure, constriction and protection, without any antiseptic, the granulations are held in proper proportions, and the wound heals over fast. The only contraindication is progressing ulceration; under all other conditions, this method has superior advantages, he reiterates. The secretions escape between the strips of plaster. He has seen extensive bed sores heal under this treatment. It acts better when the strips are left unmolested for six or eight or more days. The gauze above can be changed as desired. This plaster treatment has the same protecting action as a paraffin film, but the latter lacks the constriction and pressure possible with the plaster. He uses ordinary adhesive plaster about 2.5 cm. wide. The simplest way to sterilize it, he says, is to leave it in alcohol for a day or two and then burn out the alcohol.

Riforma Medica, Naples

Aug. 3, 1918, **34**, No. 31

60 *Adequate Dietaries. F. Bottazzi.—p. 605.
61 *Experimental Atheroma. C. B. Farmachidis.—p. 612.
62 *Spirochetes in Urine. F. Giugni.—p. 614.
63 Welfare Work for Children in Italy. A. Ascarelli.—p. 615.
64 Technic for Douching the Nose. G. Gradenigo.—p. 616.

60. **Soldiers' Rations.**—Bottazzi here replies to Baglioni and Rho. Their articles were summarized on pages 692 and 1256. He emphasizes the difference between the calculations of the chemist and the physiologist. Their figures are not interchangeable, for reasons which he explains.

61. **Changes in Myocardium Secondary to Sclerosis of Aorta.**—Farmachidis induced atheroma of the aorta in rabbits, and invariably the myocardium of the left ventricle developed sclerosis in consequence, without any general infection or intoxication.

62. **Spirocheturia.**—Giugni found spirochetes in the urine of a soldier with nodose erythema. This and some other experiences related confirm that spirochetes may be found in the urine without any connection with the disease the man may be having, or even in the healthy.

Rivista Critica di Clinica Medica, Florence

Aug. 3, 1918, **19**, No. 31

65 Factitious Phlegmons. G. Garin.—p. 361. Conc'n.
66 Instrument to Facilitate Pectoral Fremitus. Fabbretti.—p. 364.
67 *Toxic Gases in Warfare. C. Capezzuoli.—p. 367. Conc'n.

67. **Gases in Warfare.**—Capezzuoli reviews what has been published on this subject, especially the long array of Italian contributions. In conclusion he mentions that Professor Lo Monaco's experiments have apparently demonstrated that chlorin compound gases can be utilized to preserve meat, fish, etc., and may be destined to aid materially in food conservation in normal times. The gases he has been testing are not toxic, and do not modify the taste when used for this purpose. Specimens of tissue from a lung mummified by the war gas took the stains and responded to other histologic tests like normal tissue.

Amazonas Medico, Manaos

March, 1918, **1**, No. 1

68 Finger Prints of Brazilian Indians. G. Ramos.—p. 4.
69 *Nodular Leishmaniasis. A. Da Matta.—p. 13.

70 Fatal Syncope under Chloroform. J. De Moraes.—p. 16.
71 Retrograde Catheterization. T. Beltrão.—p. 23.
72 Ulcerating Granulomas. A. Da Matta.—p. 25.

69. **Nodular Leishmaniasis.**—In Da Matta's case the feet and lower legs were covered with nodules, some of them ulcerating. Some were confluent, and had the "mossy foot" aspect. The pseudoverrucous affection was of several years' standing and had proved rebellious to all other measures but prompt benefit and final healing of all the lesions followed intravenous injections of 1 per cent. tartar emetic, with local application of a 0.5 per cent. solution, and potassium permanganate. Sodium cacodylate was also given between the courses of injections during two months. The cure of the leishmaniasis was then complete; but there is still hypertrophy of the legs, probably from the chronic erysipelas which had developed as a complication.

Annaes Paulistas de Medicina e Cirurgia, S. Paulo

April, 1918, **9**, No. 4

73 *Urinary Stones in Children. R. Puech and Souza.—p. 73. Conc'n.
74 Syphilitic Facial Diplegia. L. Torres.—p. 89.

73. **Urinary Stones in Children.**—Puech and Souza have compiled thirty-five cases in the state of S. Paulo in the course of ten years, nearly all in the families of immigrant colonists. Only 3 per cent. were in girls; none of the children were less than a year old, and the majority were between 3 and 5. Phimosis was apparent in 70 per cent. of the cases. Suprapubic incision is the best treatment, suturing the bladder at once, but not including the mucosa in the suture. There has been no recurrence in any instance after this operation; the only death in the series was due to other causes.

Archivos Españoles de Enf. del Ap. Digestivo, Madrid

August, 1918, **1**, No. 8

75 Chemistry of Gastric Juice. L. Usobiaga.—p. 337. Cont'n.
76 Gallbladder Colics. A. L. Ruiz.—p. 358.

Archivos Españoles de Pediatria, Madrid

July, 1918, **2**, No. 9

77 *Croupous Inspiration. A. Hinojar.—p. 385.
78 *Enlarged Glands in Child's Groin. V. Juaristi.—p. 400.
79 *Aids to Memory in Infant Feeding. R. Eyzaguirre.—p. 404.

77. **Croupy Respiration.**—Hinojar describes some typical cases to show the importance of search for the often unsuspected cause for the *tirage* or croupy wheezing in a child, instead of assuming diphtheria as a matter of course. A physician called him up one night for intubation of a child with membranous croup, but he found that the suffocation was from the tonsils, and he at once cut out both tonsils, with complete recovery. The removal of inflamed tonsils, he adds, is not such a serious matter as some suppose. The clue in this and similar cases was that the child's crying voice and cough were clear, not hoarse. Another child was being treated for diphtheria but intubation proved impossible, and the child was brought to him. The absence of hoarseness in the infant's crying voice led to discovery of a retropharyngeal abscess and of the absence of false membranes. Another child was brought for tracheotomy on account of extreme dyspnea and *tirage*, but the voice was clear and the *tirage* seemed to be at the base of the thorax. Necropsy confirmed his assumption of tracheobronchial adenitis. A hoarse cough, with crying and speaking voice clear, locates the stenosis below the glottis. A clear cough, with hoarse voice, locates it in the glottis. When the cough and voice are both clear, the stenosis causing the *tirage* is above the glottis, in the pharynx. Stenosis inducing croupy inspiration is almost always in the larynx, and in children is acute.

When there are false membranes, these protect the mucosa of the larynx during intubation. Hinojar insists that under other conditions tracheotomy is more prudent, more certain and less dangerous than intubation, which should be restricted to laryngeal diphtheria. Puncture of the cricothyroid membrane is a procedure borrowed from the veterinarians, using the same trocars and elliptical section, the longer diameter transverse. He reiterates that this takes no more time than intubation, while it is free from its dangers and requires no special technic nor experience. It relieves the patient until the definite tracheotomy can be done. Zorraquin's valve tracheotomy permits free ingress of air but closes against expiration, so that the expired air has to escape through the natural passages. This prevents atrophy, etc., from disuse, while expiration can proceed more forcibly than is possible through the tracheotomy cannula, the vocal cords, etc., yielding more to pressure from below than from above. For these and other reasons stated, this valve tracheotomy seems from the theoretical and experimental standpoint to have numerous advantages, including the partial reestablishing of normal respiration with a positive tension during expiration. This safeguards the heart and lungs. An illustration is given of the valve device, a metal drum with mica disk adapted to the Broca tracheotomy cannula. Hinojar has had no clinical experience with it.

78. **Adenitis in Child's Groin.**—Juaristi says that among his 20 cases of this kind, in 4 the child had been referred to him with the diagnosis of appendicular phlegmon; in 3 others, under the diagnosis of coxalgia, and in 8 others everything had been thought of except the actual affection. The child's gait may deceptively simulate that with coxalgia. In one typical case the 8 months infant seemed to be suffering pain, with fever, but its appetite and digestion were good. Palpation of the contracted abdomen was negative, and no cause for the child's restlessness and crying was discovered until the ninth day, when the left leg was found swollen throughout. This was traced to a phlegmon in the groin, with a chain of five swollen glands.

79. **Calculations for Infant Feeding.**—Eyzaguirre gives the formulas advocated by different pediatrists, based on the age, weight, etc., of the infant. Comby's method seems to be the simplest, namely, to give the child 150 gm. for each kg. of weight, that is, 15 per cent. of its weight. The dilution of the milk is determined by a fraction of which the numerator is the child's age in months, and the denominator is the succeeding month. This for a 1 month child would give one-half milk; 2 months, two-thirds milk; 3 months, three-quarters milk. If this dilution is not enough, the fraction might be modified to a numerator representing the month before and the denominator the actual month of the child's age. A 3 months infant would thus be given two-thirds milk. Under 1 month, one-third milk seems preferable.

Cronica Medica, Lima

July, 1918, **35**, No. 661

80 Myopathy in Tuberculous Young Man. E. Odriozola.—p. 187.
81 Stuttering. L. D. Espejo.—p. 191.
82 Present Status of Leishmaniasis. E. Escomel.—p. 198. Conc'n.

Gaceta de los Hospitales, Mexico, F. D.

July, 1918, **1**, No. 4

83 *The Retina of the Horned Frog. I. Ochoterena.—p. 65.
84 Treatment of Phimosis from Chancre. F. Robles.—p. 69.
85 *Ocular Complications of Typhus. J. de J. Gonzalez.—p. 70.

83. **Comparative Neurology.**—Ochoterena's finely illustrated article describes the microscopic findings in the retina of the horned frog, and discusses the evolution of the eye.

85. **Ocular Complications of Typhus.**—Gonzalez states that he had ample opportunity to study the ocular complications during the great epidemic of typhus in Mexico during 1916 and part of 1917. It spread to the remotest hamlet of the central tableland. In his town, Leon, there were more than 8,000 cases of typhus. All ages were affected, including infants a year old, who previously had been deemed immune. He encountered cases of complications from vasodilatation, from local infection, from toxic action, and paralysis or contracture of the oculomotor muscles secondary to toxic action on the nerve centers or meninges. In other cases, syphilitic lesions developed in eyes damaged by the typhus. Still another complication was necrobiosis of the cornea from disturbance in its nutrition in the course of extremely severe typhus. The cases in this last group all terminated fatally, and nothing proved effectual in warding off this necrobiosis of the cornea. On the other hand, the complications from local infection could be warded off with care, tending the

catarrhal conjunctivitis which inevitably preceded the corneal ulcer. The ulceration was always central, the patients lying in their stupor with lids partly open so that the cornea got dried, the epithelium cracked and infection was thus invited. The eyes should be washed out daily with isotonic saline to ward off conjunctivitis; when it developed, a weak solution of a silver salt always proved effectual in his hands.

Gaceta Medica de Caracas, Venezuela

July 31, 1918, **25**, No. 14

86 *Balantidium Dysentery in Venezuela. J. A. Tagliaferro.—p. 145; R. G. Rincones.—p. 148.

Aug. 15, 1918, **25**, No. 15

87 *Spirochete in Rats at Caracas. J. Iturbe and Gonzalez.—p. 158.
88 Relations Between Brazilian Trypanosomiasis and Endemic Goiter. A. Ayala.—p. 160.

86. **Balantidium Dysentery in Venezuela.**—Tagliaferro describes three cases and some negative attempts to transmit the disease to cats. One of Tagliaferro's patients kept pigs, and various data on record testify to the identity of the *Balantidium coli* found in man, in pigs and in monkeys. Rincones remarks that in the rural districts domestic animals often share the family hearth. He says, "The olfactory orchestra of the foods and exfoods disintegrated by the digestive organs of the various domestic animals, fowls, rats and mice under the family roof, runs the whole scale of odors, and like a dirge rises above the promiscuity of these heedless beings all crowded into one room." He adds that 153 cases of balantidiasis are on record in accessible literature, with a death rate of 23 per cent. In conclusion Rincones describes the method of treating coloproctitis caused by ciliated infusoria, as suggested by F. Smithies of Chicago, and he urges a trial of it in balantidium dysentery.

87. **Spirochete of Hemorrhagic Jaundice Found in Rats at Caracas.**—Iturbe and Gonzalez inoculated guinea-pigs with an emulsion of the kidneys of ten rats and of seven rats. One guinea-pig developed typical hemorrhagic febrile jaundice, and spirochetes were recovered resembling in every respect the spirochetes described by the Japanese and the Belgian writers.

Prensa Medica Argentina, Buenos Aires

July 20, 1918, **5**, No. 5

89 Supracondylar Fractures. M. H. Vegas and C. Lugones.—p. 45
90 Diagnosis of Tuberculosis in Children, especially the Latent and Masked Forms. G. A. Alfaro.—p. 47. Conc'n.
91 Cerebellar Tumor. H. Lea-Plaza.—p. 49.

Repertorio de Medicina y Cirugia, Bogota

July, 1918, **9**, No. 10

92 *Scleroderma or Leprosy? J. Aparicio.—p. 510; I. Rodriguez.—p. 522.
93 *Unclassified Tropical Lesions. P. Martinez and Lopez.—p. 525.
94 *Cocain Local Anesthesia. A. E. Marulanda.—p. 534.
95 Metabolism in Diabetes. E. Gomez.—p. 537.

92. **Scleroderma or Leprosy.**—A case is described over which there has been much discussion, as the patches of scleroderma are accompanied by nervous disturbances remote from these patches. The ulnar neuritis, in particular, does not fit into the scleroderma frame. Aparicio's decision therefore is that the case is an incomplete form of nervous leprosy, and that isolation is not required. Rodriguez reports that five applications of electricity in this case improved the skin patches until the scleroderma had nearly disappeared.

93. **Tropical Pathology.**—Martinez and Lopez give illustrations of two cases in which a large tumor had developed just above the ankle, with a smaller tumor on the other side of the leg. They have encountered a number of cases of these juxta-articular nodules near the ankle, knee or hip joint. They seem to be a torpid fibroma growth, close to a large joint, peculiar to the tropics. An illustration is also given of a type of ulceration on the dorsum of the foot with which there is so much retraction of the cicatricial tissue that the foot is drawn up till severe deformity results. These "retractile ulcers" develop after a trauma, as a rule. The resulting deformity may suggest ainhum, or the deformity from retraction in these cases may be equal to that from an extensive burn of the third or fourth degree. Amputation was required in the two cases illustrated. In a third group of cases the ulcerative process begins between the toes and runs a highly destructive course, the toes dropping off and the destructive process invading the dorsum of the foot. The discharge from it is profuse and fetid, but the tendency to a spontaneous cure excludes malignant disease.

94. **Cocain Local Anesthesia in Abdominal Surgery.**—Marulanda addresses his remarks to physicians in regions without hospitals. He expatiates on the advantages of local anesthesia in these conditions, and especially on the use of cocain for the purpose. In Colombia, the lack of corsets, the numerous pregnancies and the hard manual work of the women favor production of umbilical hernia, and he describes four cases in which he operated for this, under cocain anesthesia, with ease and complete success. Umbilical hernia in women inclined to obesity develops with such alarming symptoms that the physician cannot believe that the hernia alone is responsible for the intense colic pains. They may coincide with digestion, and if the woman has a tendency to neurasthenia, she may experience pains and symptoms which lead the physician widely astray. He warns further that the presence of ascarides is practically certain in the rural districts of his country, and it is almost indispensable to administer a vermifuge the day before the contemplated operation. Otherwise there is liable to be paralysis of the intestine. The inexperienced may feel called on to open up the sutured herniotomy wound, but under 0.2 gm. of santonin all subsides at once. He uses a 1 per cent. solution of cocain, thus anesthetizing a broad zone of the skin.

Revista Española de Medicina y Cirugia, Barcelona

July, 1918, **1**, No. 1

96 *Transplantation of Nerves and Neurotropism. S. Ramon y Cajal.—p. 2. Concluded in No. 2, p. 49.
97 Tuberculosis and Antityphoid Vaccination. J. Peset.—p. 9.
98 Drainage in Hydrocephaly. J. M. Bartrina Thomas.—p. 13.
99 A Year's Surgical Work. Id.—p. 13.

August, 1918, **1**, No. 2

100 *Cholecystostomy versus Cholecystectomy. S. Cardenal.—p. 57.
101 Stenosis of Duodenum. Urrutia.—p. 65.

96. **Secret of Rapid Repair of Gap in Nerve.**—Ramon y Cajal called attention in 1892 to the ameboidism of newly formed nerve fibers seeking the proper direction for bridging a gap in a nerve. Later he became convinced that some substance in the nerve stump attracted the young fibrils, and thus guided them in the right path. He reviews what others have published on this subject, and reports new experimental research. Everything seems to indicate that the substance which attracts the sprouting fibrils is in the cells of the sheath of Schwann. These cells may act effectually whether they are in the nerve graft or in the peripheral stump. But in order to exert this attraction these cells must be alive and actively functioning. The attraction is the more intense the younger the animal and the greater the vitality of the tissues. It seems to be immaterial whether the Schwann cells are in the stump or in the interposed graft, provided their vitality has not been impaired.

An interposed nerve graft obtained and implanted with the minimum of injury of the tissue cells, materially hastens repair over a gap in the nerve, the sprouting fibrils rapidly running down through the graft and penetrating the peripheral stump. There is more in this phenomenon than merely growth along the lines of least resistance. Dead Schwann cells have none of this neurotropic action. Twelve illustrations show the different behavior of the sprouting fibers under different conditions. For example, if half of the sciatic nerve of a kitten is severed, the other half left intact, the new sprouting fibrils are attracted only by the Schwann cells in the peripheral stump, and very few diverge from the axial direction. But if, when the half of the nerve is severed, the other half is slightly cut with the scissors, then the sprouting fibers crowd sideways into the second half, and very few work down toward the peripheral stump. One illustration shows the rapid repair in the sciatic nerve of a kitten thirteen days after the nerve had been resected and the resected segment slit and replaced at once, before it had had a chance to get chilled. The sprouting fibrils after passing through the slit graft were attracted by the Schwann cells in the other half of the graft, and turned back into it. Other fibers wandering around in response to the attraction of the Schwann cells were unable to reach them before making a circuit around the graft. Other illustrations show the good results, although less perfect, obtained with a nerve graft from another species, or with a graft taken from another nerve in the same animal.

100. **Cholecystostomy versus Cholecystectomy.**—Cardenal admits that cholecystectomy is indicated when the gallbladder is inflamed from the presence of stones and the common bile duct is free from obstruction. When the common or hepatic duct is obstructed and this cannot be corrected at once, he advises against cholecystectomy. When the obstruction seems to be permanent, as with cicatricial stenosis, he advises at once an anastomosis between the gallbladder and the stomach or the duodenum. Otherwise he advocates deep cholecystostomy, suturing the gallbladder not to the skin but to the peritoneum. In several cases he has made an opening between the gallbladder and the stomach, and the functional results have been perfect. There was never any disturbance from this emptying of the bile into the stomach. In one case of cancer of the pancreas the patient improved remarkably after this operation, and there were no further disturbances from the biliary apparatus.

Revista del Instituto Bacteriologico, Buenos Aires

April, 1918, **1**, No. 3

102 *Heterogenous Hemolysins. A. Sordelli and G. Fischer.—p. 229.
103 *The Ticks of Argentina. B. Barbará and R. L. Dios.—p. 285.
104 Immunity to Anthrax: *Fate of Anthrax Bacilli in Normal and Immunized Sheep.* R. Kraus and P. Beltrami.—p. 323.
105 Cancer in Domestic Animals in Argentina. A. H. Roffo.—p. 333.
106 *Action of Snake Venom on Proteins. Houssay and Negrete.—p. 341.
107 Hemogregarine in Blood of a Snake. A. Senez.—p. 375.
108 *Modification of Gram Stain. A. Senez.—p. 385.
109 Toxic Principle of Baccharis. V. Arreguine, Jr.—p. 389.

102. **Heterogenous Hemolysins.**—Sordelli and Fischer review the literature on the subject of the natural hemolysins and especially the hemolytic properties of certain organs in certain animals for sheep and goat blood. They then report extensive personal research for comparison of the characteristics of isogenous and heterogenous hemolysins from this source. The conclusions are given in detail in English, French and German as well as Spanish.

103. **The Ticks of Argentina.**—Over four pages of bibliography and three plates accompany this comprehensive article. Four genera of ticks found in Argentina are described, with or without a shell, including eleven species. Twelve genera of ticks are known in all.

106. **Action of Snake Venom on Proteic Substances.**—Houssay and Negrete tested the action of the venom of different species of poisonous snakes on the various elements of the blood and tissues, on casein and on gelatin. Each venom has its characteristic properties, but all seem to alter the physical-chemical state of albuminous substances, and then digest them later. The proteolytic properties are distinct from the coagulating, agglutinating, toxic and hemolytic properties of the venom. They are much stronger in the venom from certain species than in others.

108. **Modification of Gram Technic.**—Senez relates that precipitation can be avoided by the technic he describes, while the specimens retain their color much better. The diphtheria bacillus, in particular, takes the stain distinctly and uniformly.

The stain is made by triturating 2 gm. of crystal violet, adding 100 c.c. of distilled water and, when entirely dissolved, adding 1.6 gm. of sodium chlorid. When thoroughly mixed, a pellicle forms on the surface and a precipitate is thrown down. This precipitate is collected on a filter paper and dried in the incubator. The powder thus obtained keeps well in small vials, well plugged. To 0.5 gm. of this powder are added 50 c.c. of alcohol at 95 degrees, and the Erlenmeyer jar is agitated until the powder is entirely dissolved, after which 130 c.c. of distilled water are added. There is not the slightest precipitation. After fixation of the specimen with heat, it is then stained with a few drops of this fluid for half a minute. It is then drained off, and the specimen is immersed in the Gram solution until the violet stain veers toward black. Then the specimen is treated with 90 per cent. ethyl alcohol, letting it fall a drop at a time on the slide, held slanting, until it does not wash away any more of the stain. The specimen is then rinsed freely in water, and it is ready for the counter stain or for mounting. The fuchsin counter stain is made in the same way, substituting fuchsin rubina B for the crystal violet. The stains thus made are bright in tint; there is no precipitation with them during the staining procedure, and they keep indefinitely. They can be used to advantage in place of Ziehl's solution for simple staining in general, and for restaining specimens treated by Gram's method. Gram positive bacteria stain a dark violet, contrasting well with fuchsin stained elements.

Semana Medica, Buenos Aires

June 6, 1918, **25**, No. 23

110 Dispensaries for Social Hygiene. E. R. Coni.—p. 633.
111 *Identification of Arsphenamin. J. A. Sanchez.—p. 635.
112 Gastro-Intestinal Disease in Children. R. Cabrera and T. Scannavino.—p. 640. Cont'n.
113 Treatment of Acute Rheumatism. S. L. *Brian.—p. 651.*

111. **Identification of Arsphenamin Preparations.**—Sanchez describes the methods in vogue, and gives the details of a volumetric method with molybdic acid; also of a colorimetric technic with sodium nitrite and hydrochloric acid.

Siglo Medico, Madrid

July 27, 1918, **65**, No. 3372

114 *Pathology of the Occult. D. A. Gimeno.—p. 585.
115 **Genesis of Catacrotous Waves of Pulse.* M. Gil-Casares.—p. 587.
116 *Health and Social Insurance. M. Salazar.—p. 589. Conc'n.
117 Influenza Mortality at Madrid. L. Lasbennes.—p. 592.

114. **Pathology of the Occult.**—Gimeno discourses on the many useful surprises which modern symptomatology has revealed. "Who knows what the future may yet reveal in the way of signs and symptoms which now we are too blind to see. The term 'incubation' means only ignorance on our part."

115. **Palography Findings.**—Gil-Casares gives some palograms of the pulse which seem to sustain his theory as to the mechanism of the production of the pulse wave. This photographic method of registering the pulse wave has thrown light, he says, on certain elements of the wave, as he explains in detail.

116. **The Public Health and Social Insurance.**—Salazar is inspector general of the Public Health Service. He describes what has been done in the line of social insurance in different countries, reiterating in conclusion that the sanitary redemption of any country is a work of general education, on the one hand, and of the solution of the economic problem of the laboring classes, on the other.

Mededeelingen van den Burg. Geneesk. Dienst, Batavia

1918, No. 4

118 *Malaria in Sumatra. H. N. van der Heyden and Schüffner.—p. 1.

118. **Malaria in Sumatra.**—This entire number is devoted to a study of practical means to combat malaria in a seashore district. The report is profusely illustrated, with photographs and maps showing the exact points where various measures are needed. It is emphasized that the general level of ground water must be kept as low as possible; existing trenches must be deepened, and branching channels provided. The terminals in the sea must have valves preventing inflow of the tides. In all drainage works in the Indies, the engineer must be guided by the biology of the mosquito. For example, the floor of the channels must be so arranged that if they should happen to run dry, there should be no crevices or cavities in the bottom that could retain a little water. No one must be allowed to dig trenches or ditches on his own initiative. The profession in malarial regions should be trained in prophylaxis, and the engineering authorities should consult constantly the local physicians.

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MILITARY ASPECT OF STATUS LYMPHATICUS

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During the past thirty years it has been the conclusion of many pathologists who have carefully observed the general configuration of the cadaver at necropsy that the fate of the human body is not a matter of chance but in general is controlled by certain intrinsic physical tendencies that are of congenital origin.

This conclusion is merely in line with the doctrine of a constitutional predisposition to disease, the importance of which has been submerged by the advent of the germ theory. Clinical observers, especially in recent times, have not been so much impressed with the importance of constitutional factors doubtless because the most definite evidences of such tendencies are revealed chiefly at necropsy, and possibly also because the modern clinician is greatly occupied by a multitude of laboratory tests and aids to diagnosis and prognosis, which apply without regard to any constitutional basis of disease.

Recently, the experience of the Medical Department of the Army has revealed in a highly impressive way the fact that, under the stress of military life, certain physical factors which escape ordinary physical examination soon declare themselves most emphatically, with the result that numbers of apparently healthy men die, or break down and are incapacitated, and become a burden instead of an asset in the military force. Any one who has the slightest conception of the general factors leading to disease cannot fail to recognize that anatomic defects are chiefly responsible for the recent discoveries of "irritable heart," "irritable thyroid," nervous instability, functional shell shock, etc. It also seems highly probable, and I have some concrete pieces of evidence to show, that in a great variety of conditions the stress of military life is bringing into action the inevitable force of constitutional tendencies in the unexpectedly fatal outcome of many common diseases and traumas.

Since constitutional defects cannot be remedied, it is of practical importance chiefly to inquire whether there is any way in which they can be recognized, and whether there are any means of avoiding their hazards.

In one form of constitutional dyscrasia, status lymphaticus, it is possible to recognize the pronounced forms during life, and to a considerable degree to avoid its special dangers. I believe that it is of considerable importance that the attention of military medical men, beginning with medical exemption boards, be sharply drawn to the stigmata of status lymphaticus, both for the purpose of establishing rules of procedure in the disposition of such cases, and in order to gather new information regarding the significance of status lymphaticus from the military standpoint, and also in order that the military physician may enjoy the intellectual satisfaction of understanding certain events occurring in the course of disease and injury that are generally quite obscure.

ANATOMIC CHARACTERS

Status lymphaticus is characterized by a feminine type of bodily conformation in the male, absence of axillary and deficiency of pubic hair, general delicacy of integument, a tendency toward abundant deposits of subcutaneous fat, evidence of rickets, small size of the heart and thinness of aorta and other arteries, persistence of thymus, and hyperplasia of lymphatic tissues in tonsillar ring, ileum and spleen.

Two phases of these physical characters are recognized, in children and in adults, the latter being a recessive stage of the former. In infants and before puberty, lymphatic hyperplasia, large thymus, and signs of rickets are prominent, while in adults the lymphatic hyperplasia is gradually succeeded by atrophy and by a form of sclerosis which Bartels[1] says is peculiar. In adults the unfolding of the growth tendencies of the body brings out the feminine characters of the male physique, and often the persistence of the thymus, while necropsy discloses hypoplasia of the heart and the arterial system.

The scope of the anatomic changes included by many observers in status lymphaticus is considerable. The body is gracefully formed, the limbs rounded, the thorax long, the pelvis heterosexual. Pribram[2] includes genu valgum, persistence of epiphyseal lines, flatfoot, and hyperextensibility of the elbow joints. He found that the outstretched arms exceed the body length in 95 per cent. of the cases, but this relation often occurs without status lymphaticus.

The genitals are hypoplastic (46 per cent.), and cryptorchidism may occur (from 2 to 3 per cent.). Kyrle[3] observed that the testes were usually normal in the gross, but presented well marked interstitial orchitis, without much disturbance of spermatogenesis or alteration of interstitial cells. In certain cases the testes are atrophic. In fifty-five cases Herrmann[4] found the ovaries usually enlarged and much elongated from interstitial fibrosis. Axillary and thoracic hair is scanty or absent, and the pubic hair in the male ends in a horizontal line, as in the female (96 per cent.). The beard is scanty (57 per cent.), and sternal hair absent (90 per cent.). The hair of the limbs is scanty or absent (65 per cent.).

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[1] Bartels: Wien. klin. Wchnschr., 1908, p. 1826; Tuberculosis, 1913, **12**, 561.

[2] Pribram: Ztschr. f. klin. Med., 1914, **81**, 120.

[3] Kyrle: Centralbl. f. Physiol., **23**.

[4] Herrmann: Centralbl. f. Physiol., **23**.

The skin is delicate. There is a tendency toward abundance of subcutaneous fat, and some subjects are distinctly obese. In certain cases with distinctly atrophic genitals, status lymphaticus is associated with eunuchoidism. In the obese eunuchoids described by Tandler and Gross,[5] persistence of the thymus was believed to exist because of roentgen shadow, but the exact relations of eunuchoidism to status lymphaticus remain to be determined. Very pronounced feminine characteristics belong chiefly to the former condition.

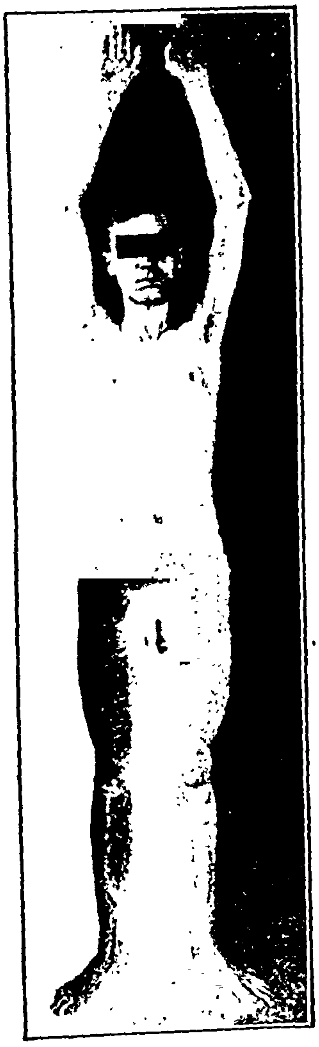

Fig. 1.—Partially developed status lymphaticus in man, aged 21. Patient has shaved only twice. Pubic hair of feminine type. Long, slender thorax.

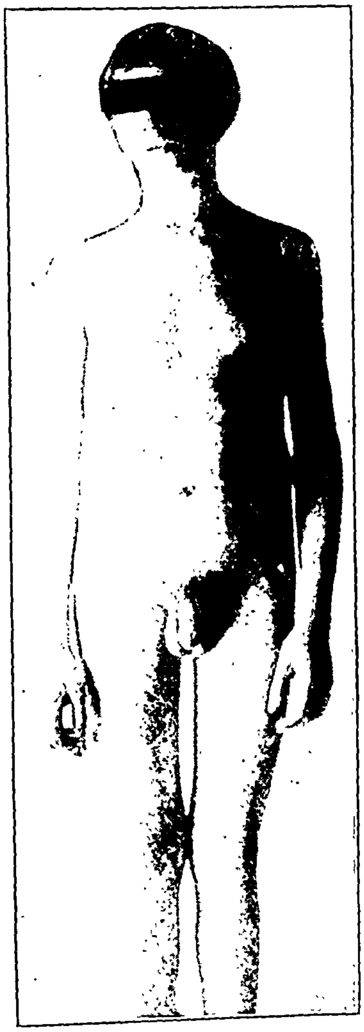

Fig. 2.—Status lymphaticus of feminine type; genitals apparently normal. Photograph lent by Dr. Charles Norris.

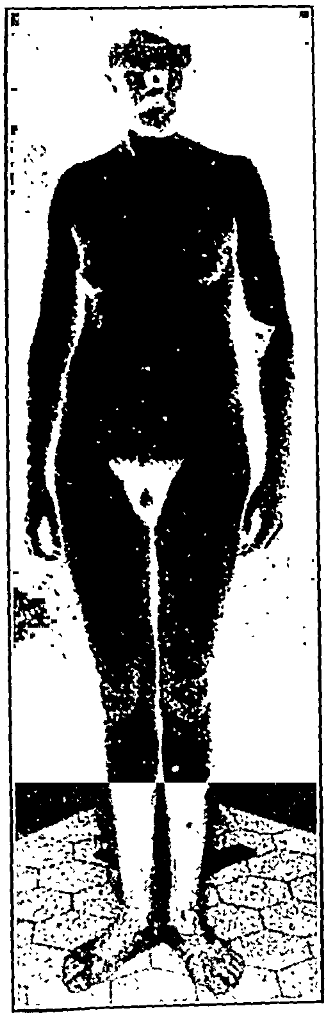

Fig. 3.—Eunuchoidism, a condition probably involving status lymphaticus, in man, aged 22; feminine body; hypoplasia of genitals. (After Saenger.)

In the female the external signs of status lymphaticus may be limited to thinness and delicacy of skin, narrow waist, arched thighs, and scanty hair. Menstruation is usually delayed, the uterus may be infantile, and the breasts poorly developed.

In children the thymus enlargement may be the most prominent feature, and thymic pressure has probably been one of the chief factors leading to the death of infant subjects of status lymphaticus. This organ persists in many young and some older adults, as one of the most significant signs of status lymphaticus. It shows simple lymphoid hyperplasia, and the process may affect aberrant lobes in the neck or in the thyroid gland. Through its relation to the thyroid it is believed to figure prominently in the cases of status lymphaticus with thyroid manifestations. In most adult subjects the thymus is small or atrophic.

The lymphatic hyperplasia occurs in infants and children up to and sometimes beyond puberty, and is often a most distinctive feature, differing from any other known form of lymphatic overgrowth. The pharyngeal ring of lymph follicles is enlarged (80 per cent.), the lingual follicles being affected more than the faucial tonsils. Rarely the cervical nodes are slightly swollen. Very striking overgrowth of Peyer's patches, especially the lowest, is frequently observed. The splenic follicles are enlarged and plainly visible to the naked eye. Swelling of mesenteric nodes is occasionally seen. The structural changes consist in overgrowth of lymph follicles and lymphocytes. Symmers[6] emphasizes the presence in many cases of degenerative and even necrotic changes in the centers of follicles, and of sclerosis which follows these changes.

Hypoplasia of the heart and aorta is the most prominent of the conditions found at necropsy. There are no systematic data regarding the weight of the heart in status lymphaticus, but the organ is usually distinctly undersized. The aorta is thin and delicate, often to a striking degree. Delicacy of the entire arterial system may exist and form the basis of apoplexy in young adults, and of various functional disorders. Some observers have attributed to the overstraining of a small heart certain forms of interstitial myocarditis occurring with status lymphaticus. With the hypoplasia of heart and aorta Virchow associated chlorosis, which may occur in subjects of status lymphaticus.

Many other abnormalities in the construction of organs are occasionally seen, as lobulated kidneys, hypospadias, polymastia, abnormal fissures, and congenital angiomas, but they are not sufficiently frequent to be regarded as essential. They seem to support the view that some fundamental defect of development exists in these subjects.

OCCURRENCE

Since there are all grades of status lymphaticus, its frequency will depend somewhat on the attitude of the observer. Two statistical studies are available.

Emerson[7] analyzed his own and Norris' observations at Bellevue Hospital. Among 3,600 necropsies, 288 (8 per cent.) showed status lymphaticus, 70.2 per cent.

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[5] Tandler and Gross: Arch. f. Entwickelungsmech., 1910, **29**, 290.

[6] Symmers, Douglas: Am. Jour. Med. Sc., 1918, **156**, 40; The Cause of Sudden Death in Status Lymphaticus, Am. Jour. Dis. Child., December, 1917, p. 463.

[7] Emerson: Tr. Internat. Cong. Inter. Med., 1914, Med. Sec., 6, Pt. 2, p. 165.

active and 29.8 per cent. recessive; 9 per cent. failed to show any other cause of death, and 242 died of infectious diseases. Recently Symmers has collected the Bellevue Hospital material, finding 457 cases of status lymphaticus among 5,652 necropsies. Of these, 249 were analyzed, showing that 118 were active, 89 recessive and 42 partial or intermediate. It was most frequent between 20 and 40 years. Pribram observed several of the clinical signs of status lymphaticus in 150 among 2,500 patients at von Jaksch's clinic (6 per cent.).

Municipal hospitals, gathering a large number of sudden deaths, show a relatively high proportion. It is obvious that the condition must appear highly important to medicolegal observers, while for the same reasons the general practitioner commonly ignores it, or more often has never had it brought to his attention.

Woodward seems to have suspected that small hearts were connected with sudden deaths. He referred to sudden deaths of convalescents from dysentery, often while the patients were walking about, and in ten of these the heart was noted as small, in four cases weighing 5½ ounces or less. No cause of death was discovered. Among the general cases of undetermined causes of death, twenty showed small hearts, in eight of which the weight fell below 6½ ounces, once to 4 ounces.[8] I am unable to find any other reference to this condition in reports from the Civil War.

CLINICAL MANIFESTATIONS

Only a brief enumeration of the clinical conditions in which status lymphaticus figures can be attempted within the scope of the present report.

In infants, many cases of unexpected death, occurring instantly, or after rapidly increasing dyspnea or heart failure, have revealed only an enlarged thymus which has mechanically obstructed breathing and heart action. This so-called thymic death is one of the most numerous and best known groups of cases.

Death under anesthesia occurs, in a large proportion of cases, in subjects of well-marked status lymphaticus. Here respiratory failure precedes stoppage of the heart.

Cardiac and arterial hypoplasia dominates the clinical picture in most adult cases. The small heart, even under the most critical estimate, must reasonably be assumed to carry with it defective muscular energy and low metabolism. The subjects tire easily and suffer from palpitation, pain, cardiac dyspnea and low blood pressure, and in many cases of sudden death it has been assumed that the heart stopped beating from exhaustion or from some form of reflex inhibition. Here may be classed the numerous cases of sudden death while bathing, or after trivial mechanical trauma. Many have warned against the careless injection of alien proteins, antiserums, vaccines and arsphenamin in subjects of status lymphaticus. While in this field of functional disturbance of the hypoplastic heart the evidence is vague and inconclusive, it may at least be said that these cases are wholly without other explanation, and invite investigation by modern methods. Ortner[9] was quite sure that the small heart is particularly subject to functional disorders and subsequent myocardial changes.

Precocious apoplexy in young adults is a highly characteristic termination of status lymphaticus, is comparatively frequent, and may be expected especially in military service. Norris encountered many such cases at Bellevue Hospital. I have examined several of them collected by my colleague, Schultze, in which the cerebral vessels were extremely delicate and usually free from sclerosis. They are clearly distinguished from nephritic cases in young adults, but nephritis may be added.

In relation to infectious diseases, status lymphaticus appears to have much significance. It has long been known that these subjects do badly under infection. Elser and Huntoon[10] found that in all their fulminant cases of meningitis the patients were subjects of status lymphaticus, and this observation has been supported by others. McNeil[11] reports fulminant pneumonia with status lymphaticus. Symmers reports fifty-five necropsies on meningitis, 60 per cent. in subjects of status lymphaticus. In thirty of these cases of known duration the disease was fatal in an average period of 3.4 days, and nine patients died within forty-eight hours. In thirteen subjects of status lymphaticus dying from typhoid fever, the average duration was fourteen days. In his series, about 10 per cent. of all subjects of status lymphaticus presented acute infective lesions of the heart valves. Daut[12] found that more than 25 per cent. of patients dying of diphtheria were subjects of status lymphaticus.

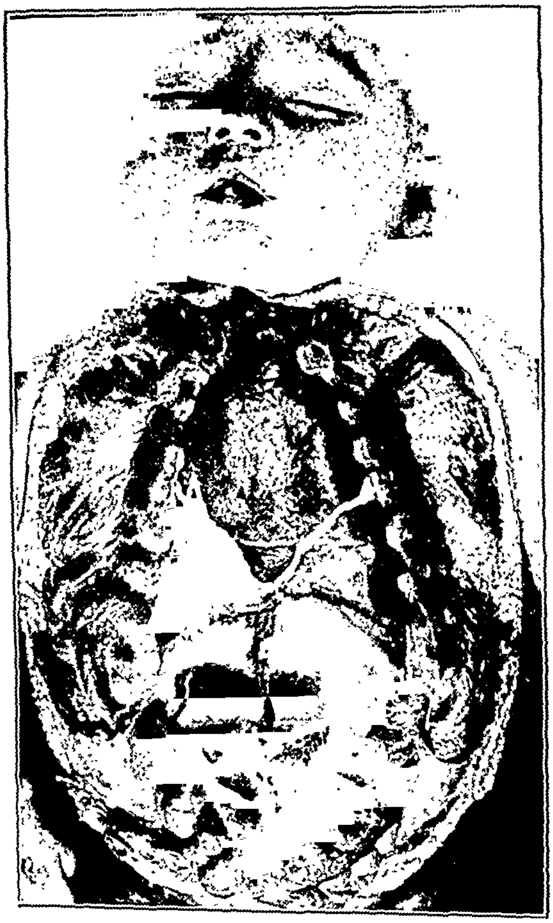

Fig. 4.—Hypertrophic thymus in a new-born infant; case of Dr. Symmers'.

The relation to tuberculosis shows several phases. The combination of rickets, lymphatism and scrofula in children is emphasized by Bartels. Subjects of status lymphaticus in general show a high resistance to tuberculosis, which takes the form of caseous lymphatic lesions, solitary brain tubercle, atypical bone lesions, etc. Addison's disease nearly always occurs in subjects of status lymphaticus (Bartels).

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[8] Woodward: Medical History, War of the Rebellion, Med. Vol. **2**, 502.

[9] Ortner: Wien. klin. Wchnschr., 1891.

[10] Elser and Huntoon: Jour. Med. Research, 1905, **9**, 89.

[11] McNeil: Brit. Med. Jour., 1914, **2**, 576.

[12] Daut: Jahrb. f. Kinderh., 1898, **47**, 141.

In exophthalmic goiter, thymic enlargement is very common, and practically all fatal cases show pronounced hyperplasia of the thymus and often other signs of status lymphaticus. The high mortality of operations on the thyroid may thus receive a partial explanation. Simple goiter is relatively common in status lymphaticus.

The condition in status lymphaticus appears to be identical with none of the specific disorders of the endocrine system, but there are definite indications that these glands are involved in various ways. The bodily configuration has some of the features of adiposogenital dystrophy. Many of the cases of hypophysial dystrophy of Froelich's type are associated with other and pronounced signs of status lymphaticus.[13] Hypoplasia of the genitals is a common feature in both sexes. The hyperplasia of the thymus can hardly be without some bearing on the question of its supposed internal secretion. Hypoplasia of the suprarenals is repeatedly observed. In this territory may possibly be found the key to the complete solution of the complex situation in status lymphaticus.

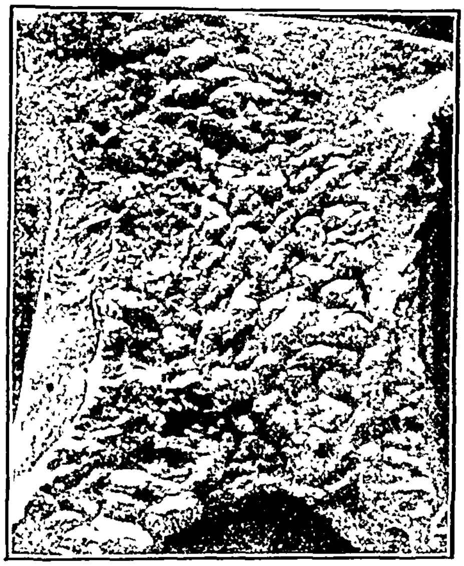

Fig. 5.—Hyperplasia of lowest Peyer's patch in status lymphaticus. From the author's case of chloroform death (1897).

The nervous system is essentially concerned in status lymphaticus, but little is known of the nature of its relation. Rokitansky spoke of overdevelopment of the brain in early life in these subjects, and Bartels has noted multiple foci of gliosis with a tendency to glioma. No definite anatomic changes in the brain have been established in status lymphaticus, but the clinical data are in some respects quite impressive. Ohlmacher[14] found that the great majority of fatal cases of epilepsy are subjects of status lymphaticus. The condition is relatively common in the mentally deficient. Not a few cases escape all other hazards, only to end in suicide. Bartels, from a study of 122 cases, concluded that status lymphaticus is practically constant and often pronounced in subjects of suicide. Miloslavic[15] studied 110 cases of suicide in military service, finding 80 per cent. with signs of status lymphaticus, as follows: thymolymphatic, 47 per cent.; lymphatic, 21 per cent.; thymic, 8.5 per cent.; partial, 3.5 per cent.

Symmers found pronounced hypoplasia of heart and aorta in all of five cases of caisson disease. This observation falls in line with others which indicate that the entire cerebral vascular system in these subjects is defective. It may be of importance in aviation.

PATHOGENESIS

The central factors in the origin of status lymphaticus must be found in the congenital hypoplasia of the cardiovascular system, and in hyperplasia of the thymus. Nothing is known of any hereditary element. The small heart and the blood vessels do not grow up with the body, but remain delicate and inadequate. Yet the skeleton, muscular system and organs are often highly developed in these subjects. In some respects this maladjustment may be brought into relation with a persistent and overactive thymus. Gudernatsch has shown that thymus feeding of tadpoles causes overgrowth of the body without corresponding maturation, which may be accelerated by addition of thyroid substance to the diet. Genital hypoplasia, although present in some cases, is not constant or as a rule prominent, but may be connected with a persistent thymus. Henderson[16] and Hatai have shown that the thymus tends to persist in castrated animals.

In subjects of this anatomic constitution there is evidence that external factors play a part in developing the lymphoid hyperplasia. Cameron,[17] who finds that more than 40 per cent. of the children coming to necropsy at Guy's Hospital are subjects of status lymphaticus, attributes the lymphatic hyperplasia to chronic inflammation of the various mucous membranes. He designates early status lymphaticus as status catarrhalis, or the exudative diathesis, finds the cause in poor hygiene and excessive carbohydrate feeding which favors wateriness of the tissues and rickets, and urges the remedy of correct feeding. His views deserve careful attention, but do not remove the necessity of a congenital basis of the condition. Blumer,[18] and especially Symmers, impressed by the presence of irritative hyperplasia of the lymph follicles with degeneration and necrosis, develop the idea of autointoxication, and Symmers thinks the intoxication of anaphylactic type, the system becoming sensitized by repeated discharges of lymphocytic proteins. The adjustment of this line of speculation with established principles of immunology is not entirely clear.

The question whether the enlarged thymus mechanically compresses the trachea in infants seems still undecided. That there is a reflex mechanism which stops the heart under conditions of mild nervous shock seems highly probable. Many clinical observations show that the vasomotor system of these subjects is quite unstable and very sensitive. Laryngismus is common in the children, and many fatalities are preceded by convulsions.

CLINICAL DIAGNOSIS

Well-marked cases of status lymphaticus are easily recognized by inspection of the whole body. An enlarged thymus in children or young adults may be recognized by the roentgen ray, but it is improbable that the lesser size of the simple persistent thymus can be determined by any method. The pharyngeal ring of lymph nodes is too often swollen in other conditions to serve as more than a suspicious sign. The lymphocytosis commonly present is too indefinite to be of any positive diagnostic value. I know of no observations by the roentgen ray on the appearance of the hypoplastic heart and aorta, nor of studies on the blood pressure.

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[13] Cushing, Harvey: The Pituitary Gland and Its Disorders.

[14] Ohlmacher: Bull. Ohio State Hospitals, 1898; New York Med. Jour., 1898, **68**, 443.

[15] Miloslavic: Virchows Arch. f. path. Anat., 1912, **208**, 44.

[16] Henderson: Jour. Physiol., 1904, **31**.

[17] Cameron: Proc. Roy. Soc., 1917, **10**, No. 8, Dis. Child., p. 135.

[18] Blumer: Bull. Johns Hopkins Hosp., 1903, **14**, 270.

The lesser grades and partial forms of status lymphaticus must probably be marked as unsafe territory, especially for the military physician. Nevertheless, when several of these less definite signs can be demonstrated in subjects of slightly developed bodily characteristics, a probable diagnosis of status lymphaticus may often be established with reasonable certainty. None of these limitations apply to the recognition of status lymphaticus at the necropsy, by the systematic examination of all the organs, followed by microscopic control.

On the other hand, the suspicion of status lymphaticus should be entertained by the military clinician, not only in the obvious cases, but in dealing with any of the manifestations mentioned above, such as irritable heart, thyroidism, nervous breakdown, epilepsy, shell shock and fulminant infectious diseases, and this suspicion should be followed to the necropsy table.

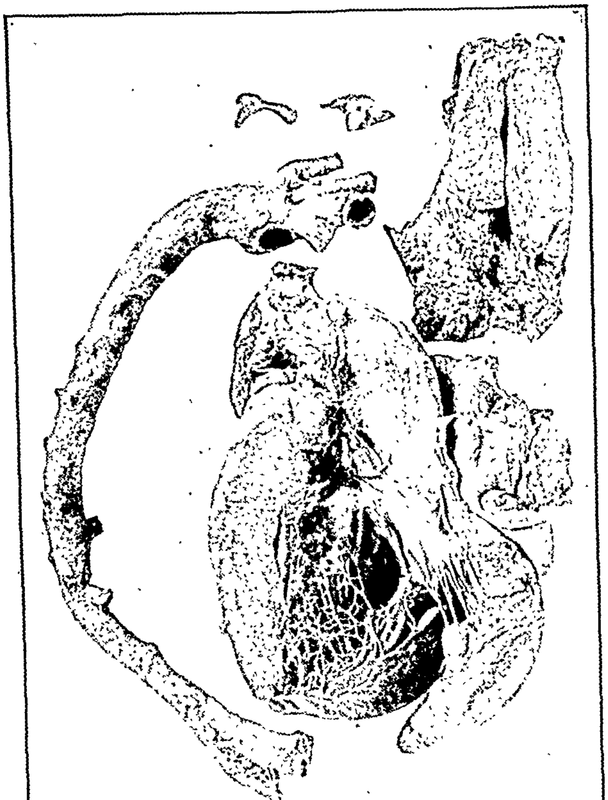

Fig. 6.—Hypoplasia of aorta and suprarenals, and hyperplasia of thymus in a girl, aged 20 years, dying of cerebral hemorrhage. Weight of heart, 307 gm.; thymus, 41 gm.; suprarenals, 10 gm. Aorta, widest external circumference, 5 cm. A case of Dr. Otto Schultze's.

With these well-attested evidences that status lymphaticus carries with it a defective vitality that results in sudden and unexpected death in many conditions of trauma and disease, it is obvious that this dyscrasia must be of considerable importance in military medicine. It would seem desirable that intelligent efforts should be made to detect the condition whenever present, that definite procedures should be adopted when it is found, and that systematic study of the material collected by the Army medical forces should be undertaken in order to elucidate many problems that still remain unsolved regarding its origin, nature and significance:

1. In the physical examination of drafted men a pronounced grade of status lymphaticus ought to be recognized at a glance, and it would seem reasonable that the subject should be rejected as unfit for active military service. Whether it is practically or economically wise to accept such subjects for any form of military service can be determined only by systematic clinical observation of those already in the service. Such a study would occupy years, and ought to be undertaken under the favorable circumstances that exist in the Army and cannot be duplicated elsewhere.

2. In the subsequent examination of men already in the service, the presence of status lymphaticus should be noted, and these men should be assigned to the less hazardous occupations.

3. In the present state of knowledge, the most substantial evidence regarding status lymphaticus and the chief source of material for study that may elucidate its problems must still be obtained from postmortem examinations. The presence of status lymphaticus should be looked for in every postmortem examination, and affirmed or negated in every protocol. The anatomic evidence of the condition should regularly be preserved for further study, and the effort be made to discover any further extensions of the anatomic changes that may possibly occur in the condition.

At present the indications point to the glands of internal secretion as most likely to throw new light on the nature of the condition. In this field histologic studies are required on the thymus, thyroid, hypophysis, pineal gland, carotid gland, pancreas, suprarenal, testis and sympathetic system. Any undertaking of this sort to be adequate can hardly omit attention to any organ in the body. The bones should be examined for old rickets, and the bone marrow for evidences of hematopoietic disorder. Since the circulatory system long retains the impress of status lymphaticus and is a specially important factor in the adult, observations on the heart, its musculature and nervous apparatus, and on the aorta and arteries are called for.

4. The clinician has an interesting task and a complex function to perform in connection with the study of status lymphaticus and in the employment of the doctrines that have accumulated about it.

The final test of the existence and importance of a bodily constitution of defective general vitality must be clinical. Since the majority of patients survive to middle life, most of them come repeatedly under clinical observation. Since there must be all grades of status lymphaticus, the condition often merges with that known as the idiosyncrasy of the patient, recognition of and respect for which constitute a substantial part of the art of medicine. In general, the clinician must determine how these subjects react to injury and disease.

Very numerous situations previously stated, showing that many patients react with sudden death, quite sufficiently impress the general clinical importance of status lymphaticus. Of the manifestations of the lesser grades of the condition little is known, and here the need of keen observation and sound clinical judgment is apparent. It would seem easy either to exaggerate or to undervalue the clinical importance of status lymphaticus. It seems not improbable that some of the best of the world's work has been done by subjects of status lymphaticus, but in the military field that work must have been fortunately adapted to the physical defects of the worker. Therefore, it seems not necessary for the clinician to condemn every subject showing status lymphaticus, but rather to find the subject's proper place in the military organization.

Speculation which seems legitimate suggests several topics of research that may be profitable from the clinical side.

No surgeon can afford to ignore the importance of status lymphaticus in the choice and administration of anesthetics.

The employment of injections of alien proteins and of arsphenamin should be undertaken with caution in subjects of status lymphaticus.

Further observations on the course of infectious diseases in subjects of status lymphaticus are called for. The idea that a fulminant course of meningitis or pneumonia is largely determined by status lymphaticus challenges the present conceptions of most clinicians and bacteriologists, but cannot be contested except by carefully accumulated clinical data.

The resistance to tuberculosis claimed by Bartels for subjects of status lymphaticus may be determined by the clinician and the pathologist. Not many clinicians will be prepared to accept the statement that Addison's disease occurs almost exclusively in subjects of status lymphaticus, but this question can be determined by the material collected in the Army.

Those who are interested in the doctrines of internal secretions may find profit in pursuing the relations of status lymphaticus to the ductless glands.

The neurologist meets phases of status lymphaticus notably in suicide, epilepsy and possibly in certain forms of mental disturbance. It would be interesting to know if any considerable proportion of patients with shell shock or other forms of nervous breakdown, with or without anatomic lesions, belong in the category of status lymphaticus. Given an overdelicate cerebral vascular system, one has an obvious predisposing condition to miliary or microscopic hemorrhages, such as occur in concussion and carbon monoxid poisoning. Almost the entire anatomic picture of status lymphaticus lends itself readily to the explanation of physical and mental breakdown on the battle field.

The irritable heart presents itself as a possible phase of the defective circulatory apparatus of status lymphaticus and one in which clinical observations on a large scale could be carried on.

All of these suggestions, however, must be offered with the greatest caution. Otherwise status lymphaticus may be lost in a maze of minor and ill defined clinical disorders of very doubtful relation to the very substantial anatomic alterations that appear in the bodies of pronounced cases. Such a fate seems to have overtaken neurofibromatosis at the hands of several continental writers, who have attempted to attach to this extremely specific anatomic condition all manner of disorders of the skin and nervous system.

The present conditions in the military service in America, when numerous races and classes are brought under the draft, seem to offer quite unique opportunity of determining the economic and military importance of definite status lymphaticus, and it is to this aspect of the subject, rather than to its possible ramifications, that the present note is directed.

Army Medical Museum.

SUPPURATIVE GINGIVITIS WITH ALVEOLAR INVOLVEMENT

A NEW SURGICAL PROCEDURE *

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NEW YORK

It is my intention to deal with that phase of the disease commonly known under the confusing name of pyorrhea alveolaris, which as indicated by its histopathology is a purely surgical disease and must, therefore, be treated surgically, this alone promising an expedient and a permanent cure.

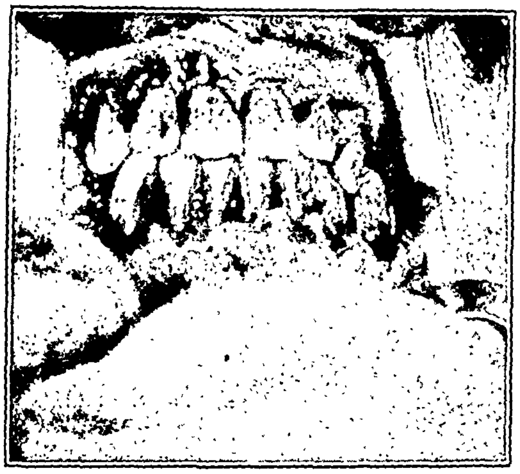
Fig. 1.—Appearance before operation.

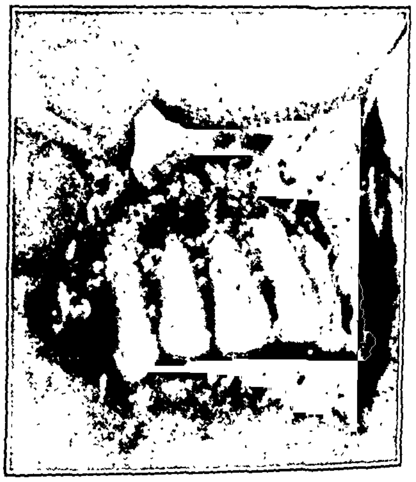
Fig. 2.—Flap lifted and retracted.

For the purpose of clear presentation, I shall briefly state that I prefer to call the diseases involving the gingivae and their soft and hard underlying and adjacent tissues by the generic name given them by Talbot, of gingivitis. Further, that for purposes of practical study, I classify gingivitis into superficial, hemorrhagic and suppurative.

The first class of the disease and the less advanced forms of the second and third classes are ordinarily amenable to proper dental treatment (scaling, polishing, etc.) in conjunction with correction of such local and constitutional disturbances as may be present.

The more advanced hemorrhagic cases, and especially the advanced suppurative cases, accompanied by degenerative processes of the alveolar bone and the soft tissues immediately covering it, are usually either traumatic, being due to long neglected accumulations of salivary calculi or other irritants (ill fitting fillings, inlays, crowns, bridges, etc.), or they are a manifestation of a disturbed metabolism due to such diseases as diabetes, syphilis, tuberculosis or chronic or acute

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* Read before the Section on Stomatology at the Sixty-Ninth Annual Session of the American Medical Association, Chicago, June, 1918.

metallic toxemias, when serumal calculi may or may not be found on the roots of the teeth, and, if present, will act as an additional irritant. Whether of traumatic origin or of metabolic or of both origins, these forms of gingivitis are oral foci of infection, to which other systemic disturbances are attributed; but this phase of the subject is not to be considered here, except for the purpose of stating that it is a sine qua non that the treatment of the oral condition must go hand in hand with the treatment of the general physical condition; neither can be brought to a successful issue without a rational treatment of both.

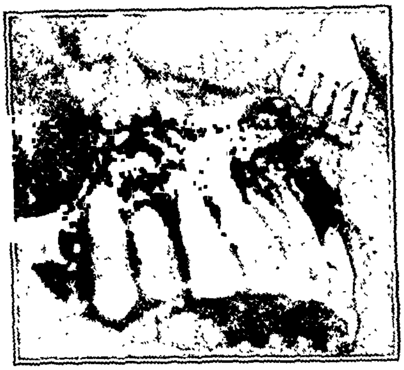

Fig. 3.—Appearance after removing all soft and hard diseased tissue.

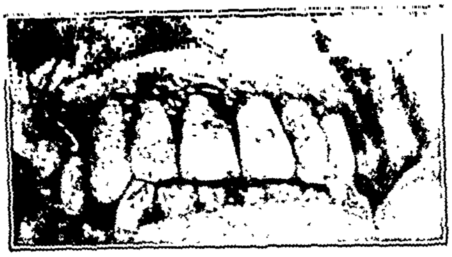

Fig. 4.—Flap replaced and sutured.

A typical report[1] of microscopic examination of specimens of tissues obtained from areas operated on reads as follows:

> The exposed connective tissue is of sluggish granulation type, heavily infiltrated by some polynuclear and many round and plasma cells. These last cells are so dense that the stroma is obscured throughout its length inward from the epithelium. The epithelium is not remarkable except at points where it is necrotic and desquamating. There are many congested capillaries and considerable extravasation by red blood cells throughout, and several spicules of alveolar bone are seen.

This shows that the condition present is of such character as clearly to indicate that nothing short of radical removal of all the involved soft and hard structures, going well into healthy surroundings, will render the part receptive of regenerative processes and insure an ultimate permanent cure. It is clear that an essential factor in operating on any part is that its approach be unobstructed, so that before terminating the operation, the surgeon may be certain of having actually removed all that is diseased; it is seldom, if ever, when this is not accomplished, that recurrence does not take place. This probably explains the reasons why, in advanced cases of so-called pyorrhea, very few permanent cures are effected with the treatments as generally practiced at present.

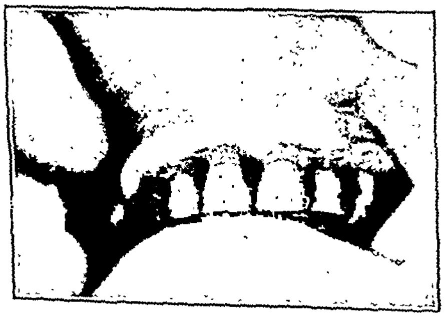

Fig. 5.—Typical appearance of upper anterior region before operation in an extensive case of suppurative gingivitis, in a patient aged 55.

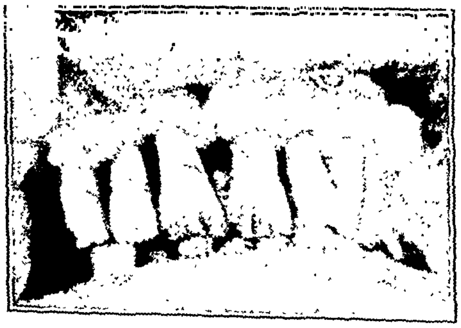

Fig. 6.—Same patient as is shown in Figure 5, six months after operation.

G. V. Black[2] speaks of the surgical treatment of pockets, describing a method of eradicating the pocket by "cutting away as far, or a little beyond, the point to which the disease has reached, which generally means some cutting away of the margin of the alveolar process as well as the soft tissue." He speaks of there being "considerable variation in results following this treatment. The rule is, however, that something will be gained in reducing the depth of the pocket each time the overlying tissue is cut away."

From this it is seen that while the need of radically dealing by surgical methods with these cases was recognized by Black, the result was not always a success and recurrence took place; hence the need of repeated ("each time") cutting away of the pocket.

Riggs, and others since his time, operated somewhat in the way described by Black. Robitzeck of Vienna, as long ago as 1862, devised an operation for cases involving an area over several teeth, sometimes all the anterior region or the posterior region or even both regions, consisting in excising with a straight incision through the soft tissues down to the alveolar process, all the abnormally appearing gum tissue. A scraping of the exposed alveolar bone followed the excision of the soft tissue, and the patient was dismissed. In cases in which cures were effected with this treatment, the result of the straight incision was such as to leave a very unsightly aspect of the parts.

After practicing Robitzeck's operation for a number of years, I have found that it was very useful in cases of advanced hemorrhagic gingivitis and often in cases of not very advanced suppurative gingivitis. I found, however, that in somewhat modifying his technic I could obtain a more pleasing ultimate appearance and a local condition more easily kept clean.

My modification consisted in excising the diseased gum tissue, instead of by a straight incision, by following the original festoons of the gums, going well into the healthy tissue, thus leaving behind a scalloped edge, which I packed tight with a strip of folded iodoform gauze one-eighth inch wide. The ulterior healing would result in an appearance of the gum very much as if it had never been diseased, and with no signs of an operation noticeable; the gingival papillae would be practically restored.

This operation, however, was purposeless in advanced suppurative cases in which the involvement of the soft and alveolar tissue was extensive, and recognizing the cause of the failure to be the lack of proper approach to all the involved area, I devised the following operation:

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[1] Meeker, L. H.: From the Pathological Laboratory of the New York Post-Graduate Medical School and Hospital.

[2] Black, G. V.: A Work on Special Dental Pathology, Chicago, Medico-Dental Publishing Company, 1915, chapter on Treatment of Chronic Suppurative Pericementitis.

TECHNIC OF OPERATION

The patient is prepared as for all oral surgical operations, performed under procain-epinephrin conductive anesthesia.

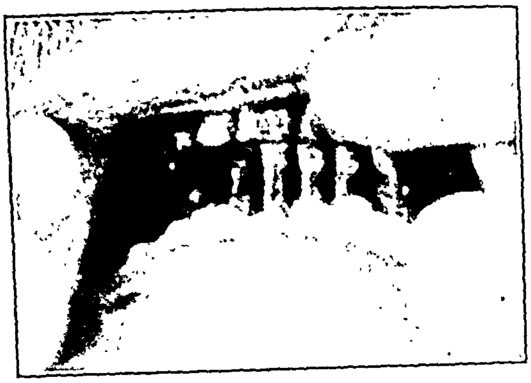

Fig. 7.—Typical appearance of lower anterior region before operation in an extensive case of suppurative gingivitis in a patient aged 55.

The part to be operated on (Fig. 1) is swabbed with tincture of iodin, and a flap is lifted by making two parallel incisions, starting at the cervical free border of the gum, and carrying them apically to the apical region each side of the area over the tooth or teeth involved. The incisions are made so as to penetrate the mucosa and submucosa, and to include the periosteum. This, with the gum tissue overlying it, is lifted with the raspatory, retracted, and held in position by the assistant (Fig. 2). Thus the diseased part is well exposed, and with suitable curets and knives, all the inflamed, infected, granulomatous tissue found, between and surrounding the roots of the teeth, is removed.

Next, with delicate chisels and mallet, the alveolar plate is chiseled away from around the denuded portions of the roots, so as to insure the removal of any and all infected bone covering the roots, which are then well curetted. The rough edges of the remaining alveolar bone covering the roots are well smoothed so as to form an even surface with them (Fig. 3).

The flap is then released, and its inner aspect is inspected for possible adhering inflammatory and granulomatous

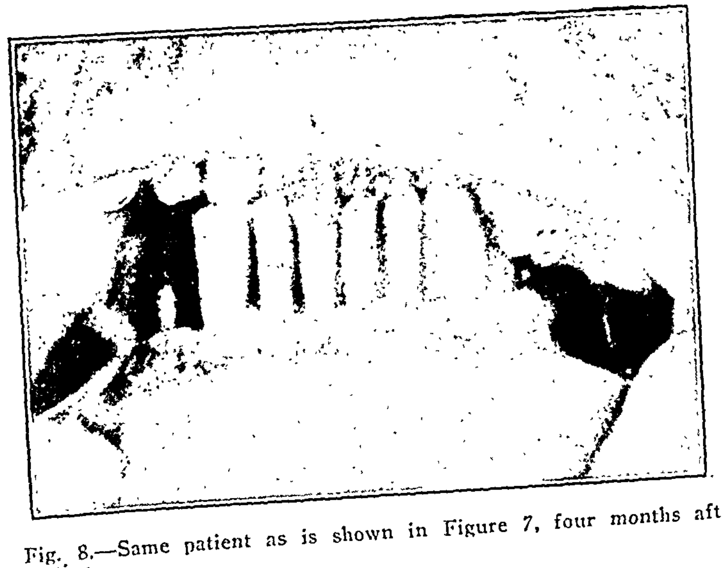

Fig. 8.—Same patient as is shown in Figure 7, four months after operation.

tissue, which is thoroughly curetted away, disturbance of the remaining healthy periosteum being carefully avoided. The parts are washed with physiologic sodium chlorid solution, swabbed with a 50 per cent. solution of the official tincture of iodin, the wound surfaces are freshened up, and the flap is replaced in position and sutured (Fig. 4).

The sutures are taken at each end of the incision, one near the cervical end and the other near the apical end. When the operation is performed over an area covering more than four teeth, it is well to take one or two additional sutures between the teeth, securing the approximation, for instance, of a labial flap to the palatal gingiva. The parts of the free edge of the sutured flap that appear to be necrotic from lack of nutrition, because of the long existing interposed infection, are cut away with sharp scissors, leaving a clean cut which, when healed, presents a well adhering surface, surrounding the root of the tooth. Before the patient is dismissed, the parts are again swabbed with tincture of iodin and covered with a strip of iodoform gauze, which is changed once or twice at intervals of twenty-four hours. The sutures are removed on the fourth or fifth day, and unless the operation was attempted in an extensively necrotic case, in which removal of the tooth or teeth should have been practiced, there will in time be new bone formation around the roots, complete reattachment of the soft tissues, and quite loose teeth will become firm and stay firm (Figs. 5, 6, 7 and 8).

COMMENT

It is needless for me to say that it is advisable that the mouth be placed in as hygienic a condition as possible before the operation, all exgingival irritants, such as salivary calculi or ill fitting fillings, inlays, crowns, etc., being removed from the area to be operated on, and preferably from the entire mouth. In cases in which, for some reason or other, this was not done prior to operation, the patient must be warned

Fig. 9.—Amount of alveolar resorption over upper anterior region in patient on whom operation was performed, shown in Figure 5.

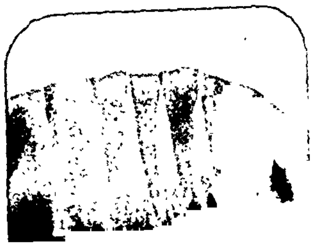

Fig. 10.—Amount of alveolar resorption over lower anterior region in patient on whom operation was performed, shown in Figure 7.

that it ought to be done as soon as the parts have sufficiently recuperated to permit handling them, and the rest of the mouth, for such purposes. This is usually from ten to twelve days after the operation. The patient may then resume the rational care of teeth and gums with tooth-brush and tooth-powder, etc., on the operated area. In the rest of the mouth this need not be interrupted at all, except in rare cases, for one day after operation.

There is usually no discomfort following the operation. At times there is some swelling and pain, after the effect of the procain wears off. The application of an icebag fifteen minutes to the hour, for two or three hours, usually brings prompt relief from pain and reduces the swelling.

All areas of the mouth, without exception, can be operated on as described above. I have extended the operation over as many as six adjoining teeth; but it is advisable when there is a great deal of suppuration in the entire region not to operate at one time over more than three or four teeth, in order to avoid opening up too large an area for septic absorption.

Whenever there are devitalized teeth in the area to be operated on, these must first be thoroughly treated; root canals must be thoroughly, aseptically filled. Apicoectomies may be performed at the same time as the operation for the suppurative peridental condition. In multirooted teeth this is not always practicable and, therefore, such nonvital teeth, with periapical and peridental pathologic conditions, would better be removed.

As in all other oral surgical operations, the roentgenogram (Figs. 9 and 10) is an indispensable adjunct in diagnosis. It is my experience that when the roentgenogram shows that one side of the root is still supported by investment tissue, the case is a good operative risk. Even in cases in which apparently, from the roentgenogram, the investment tissue is lost almost to around the apical region, the tooth, however, responding to the ethyl chlorid thermal test, the operation was successfully performed in a small number of cases attempted for purposes of experimentation.

ADVANTAGES OF THE METHOD

Full exposure of the entire affected area is obtained, and hence facility for a thorough operation. Once the operation has been correctly performed and the patient dismissed after a few days of observation, the parts formerly harboring infection are totally obliterated, and the patient is able with only reasonable care for cleanliness of the mouth to enjoy health in the parts formerly diseased. Some cases that would be pronounced incurable by the ordinary methods now in vogue for treating so-called pyorrhea alveolaris might be successfully treated by this surgical method.

8 West Fortieth Street.

ABSTRACT OF DISCUSSION

Dr. Arthur D. Black, Chicago: I approve of almost all Dr. Zentler presented, yet I cannot see the advantage of bringing back a flap and making a complicated operation instead of simply cutting away the overlying tissue. Scraping the surface of the root and bringing the soft tissue over it is just what we should not do. If the cementum is dead no soft tissue should be left overlying it. It is very easy to remove all of the detached tissue if the pockets are on the labial, buccal or lingual surfaces of roots, but when the pockets are between the teeth, it is necessary to cut away not only the tissue which is detached from the root, but also some of the soft tissue and the bone on the buccal and lingual sides of the interproximal space, in order to promote cleanliness. In most cases it is necessary to cut away a little of the edge of the bone, because the detachment from the root surface is usually deeper than the crest of the bone over the particular area. No matter what form of treatment has been employed, many operators have been deceived by the fact that the tooth, which may have been quite loose, has become much less so, and they have thought there has been a reattachment of the peridental membrane. The amount of destruction of the peridental membrane and the looseness of the tooth are not necessarily definitely related one to the other. Inflammations involving the peridental tissues cause the fibers to lose tone so they do not hold the tooth tightly in its socket. Following almost any treatment by which the inflammation is reduced, the teeth have less motion within a few days. This does not mean regeneration of tissue, but only that the fibers have regained their tone.

Dr. Moorehead might tell you of the experiments on dogs in which he and Dr. Noyes attempted to cut the peridental membrane away from the cementum. In each case they found, on microscopic examination, that the cementum had not been stripped; that a considerable amount of the soft tissue remained attached to the cementum. When cut in this way the peridental membrane will heal quite as readily as any other soft tissue.

Dr. George Edward Fell, Chicago: I have looked on this as a case of infection which must be overcome and in which the mouth has to be placed in such condition that reinfection cannot take place. It is evident that most of our cases of gingivitis can be cured if proper methods are employed and carried out radically.

Dr. Thomas L. Gilmer, Chicago: Dr. Zentler has indicated that bone is built up on the sides of the roots of these teeth. I would like to have him state rather definitely, if he will, what is the nature of the union between root and tooth. Is it vital, or if nonvital, is it a union similar to that found in implanted teeth; that is, an absorption of the cementum and a building in of the alveolar process?

Dr. Truman W. Brophy, Chicago: When a part is in an abnormal state, put it to rest. So that the very best thing to do in the treatment of a tooth that is inflamed, as described in this case, would be to put the parts to rest. Band the teeth and fix them so they will not be moving about after the operation is done. In the second place, the tooth root that has been deprived of its pericementum by this suppurative process should be opened and the diseased tissue, together with the end of the root, removed. A few days ago a dentist came with his patient, for whom he removed a first lower molar some weeks before. The patient was still in a great deal of pain and distress. He had removed the tooth, the roots of which had two great abscesses. The tooth came away, but the abscesses remained. After curetting the alveoli and removing the diseased tissue the man was very comfortable in a few days.

Precisely the same condition is present in these cases where it becomes necessary to penetrate the alveolar process and remove diseased tissue together with the end of the root. The surgeon would not be regarded as a very wise man or a very conservative practitioner if he would amputate a leg because his patient had an osteomyelitis. The position is exactly the same regarding the teeth. What the doctor showed us here in the excision of diseased teeth and removal of diseased teeth is correct, and by and by there will be sufficient enlightenment on this question so that so many teeth will not be extracted unwisely.

In regard to the entrance of germs after cutting off the root of the tooth and subsequent treatment, you do not try to sew up the socket or gum tissue after you extract teeth. You allow granulation tissue to fill the alveoli, and after a while you have a well-developed alveolar process. The same is true after excising diseased tissue and the end of the root. The cavity should be left precisely as a tooth socket is left following extraction of a tooth. We all know how these sockets have filled in, leaving a good, round, smooth surface. To amputate the apex of a tooth root is right, but to make a flap and close the cavity by stitches, leaving a place where another abscess may form, should not be done. I would make a funnel-shaped opening, remove the diseased root and diseased tissue, getting it free and clean, and then keep it open until granulations fill the cavity and until the healing is complete. In that way you will not have recurrence of the disease.

Dr. Frederick B. Moorehead, Chicago: The fundamental underlying question in the type of infection suggested by Dr. Zentler is with the hard tissue and not with the soft tissue. The seat of pathology in these cases is in the hard tissue. The most important question in this whole matter is that of a normal circulation. Where you find a proliferating endarteritis associated with a chronic heart or kidney no amount of local treatment will avail. These infections will not clean up in the absence of a healthy circulation, which, of course, cannot be had unless the blood vessels are normal. Any method, therefore, that has for its object the saving of teeth under these special conditions must be contingent on the general condition of the patient. One may undertake to save teeth when the general conditions are good, while he would remove similar teeth where general conditions were poor. The condition of the circulation and the general reparative power of the patient are paramount factors in guiding us between our efforts to save teeth and their immediate removal. The tooth has no analogue and one cannot, therefore, make a comparison between a tooth and other bony structures of the body. One half of a tooth root may be vital because of its investment in peridental membrane, while the other half may be a foreign body. The portion of the tooth root which has been deprived of its peridental membrane through infection will act as a foreign body and not be sequestrated. This is not true of any other bone infection in the body. For example, one half of a long bone may be devitalized through infection and be thrown off as a sequestrum. There can be no organic union between a tooth root which has lost its peridental membrane and the surrounding bone or soft tissue. It would seem, therefore, that these elemental fundamental facts must be our guide in undertaking the management of infected teeth.

Dr. E. S. Fuller, Dayton, Ohio: Some years ago, in order to obtain better access for cleaning the root surface of a lower incisor, I made an incision along the axial line of the tooth, cleaned the surface and sutured the gum flaps together. The sutures pulled out and the root surface became exposed. This I thought unfortunate at the time, but now I think it was the best thing which could have happened. During the past three years I have been treating these "pyorrhea pockets" by removing the overlying gum tissue in all cases, excepting those where the pockets were shallow enough to become obliterated by the reduction of the gingival inflammation following the removal of deposits and the cleaning of the root surface. Many cases are seen showing a deep "pyorrhea pocket" on both the mesial and distal proximal surfaces of a tooth—say a bicuspid, for example—the adjoining teeth not being affected. In these cases I frequently extract the diseased tooth rather than resect away the gum tissue from the interproximal space, as a horizontal resection would destroy the attachment of the tooth not involved.

Dr. Arthur Zentler, New York: To understand the character of the union obtained we would have to secure a section embracing all the tissues concerned and submit the whole for histologic examination. It is not easy to obtain human subjects for this. Animal experimentation may be used for the purpose. I believe, however, that we do not have the same conditions in animal as in human mouths. Practical examination shows a union, in operated cases, difficult to penetrate with fine probes. Only by exposing the entire involved area can one eradicate the disease. Simply cutting away the pocket has not proved permanent.

Where I operate at the same time for peridental and periapical infection, I make the incisions as described in my operation. A month after removing the sutures there is no sign left of these incisions, while with the semicircular incisions for apicoectomies cicatrices are present for a long time. One need not fear to suture the flap in either of these operations, provided the operation is done as aseptically as it should be done. I never had an ulterior infection due to suturing. I thought it understood that only healthy tissue is allowed to remain, and in speaking of reattachment I did not mean a reattachment of pericementum, but a reattachment of soft tissues that had been lifted and then replaced carefully, saving the healthy periosteum. Twice I operated in cases previously splinted. The operations were failures. It was due, I believe, to the lack of normal motion. It interferes with circulation and deprives the part of proper nutrition.

It is true that the fundamental pathology is with the hard tissues and not with the soft, and that is precisely why I felt the necessity of lifting a flap and of getting to the hard tissues underneath. That is why I chisel away a strip of the involved alveolar plate as well as curetting the soft involved tissue which lies over it and surrounds the roots. That is why I pronounced it a poor operative risk to operate when all investing tissue is gone, and advise in such cases removal of teeth.

As to the general condition of the patient, I think it is understood that if it cannot be controlled one need not attempt local treatment expecting success. Both must go hand in hand. The local circulation will be improved by the operation if we remove the infected parts. The general circulation must be taken care of by the patient's physician.

Dr. Brophy: Is there not some vitality left in the cementum?

Dr. Zentler: Wherever there is cementum left on a portion of the root that had prior to operating a detachment of the investing tissue, it is an open question in my mind whether this cementum is not able to throw off further cells into newly created healthy surroundings to form some sort of attachment. Where suppuration has intervened I do not believe there will be any live cementum. We get a reattachment of healthy tissue to healthy tissue in approximating them. You need not fear at all to remove some of the healthy tissue if you must do it in order to eradicate all the diseased tissue. The lost healthy tissue will be replaced the same as in any other surgical procedure.

POSSIBILITIES OF FRACTIONAL GASTRIC ANALYSIS *

MARTIN E. REHFUSS, M.D.
PHILADELPHIA

Fractional gastric analysis has for its purpose the determination of the evolution of gastric digestion. The necessity for such extended technic is justified by the fact that gastric digestion is marked by a series of constantly changing phases, so that it may now be definitely stated that an examination of any single phase of the digestive curve gives no information as to what has preceded or what will follow that phase. The most marked changes may occur in comparatively short intervals, so that findings at one period may be doubled or tripled at another period. The main point, however, is the essential fact that gastric digestion is the response of the organ to a definite stimulus, which, in health, evolves in a perfectly methodical and coordinated manner, and in disease evolves with every possible variation. In order, therefore, to interpret gastric disease, we must study the elements governing the response of the organ in health.

NORMAL DIGESTION

From a study of normal digestion with every form of foodstuff, which the entire staff of the chemical department of the Jefferson Medical College was engaged, we arrived at the following conclusions:

Human gastric digestion is divided into a series of recurring cycles which, for the want of better names, we have called the digestive and interdigestive cycles. These succeed each other in health with regularity and represent most perfectly the normal gastric mechanism. The digestive cycle is that portion in response to the ingestion of food of any kind and evolves in a perfectly coordinated manner. There is practically no latent period and there are well marked psychic and chemical phases to secretion. The psychic secretion is very considerable, as we have been able to show, and in health it probably averages 250 c.c., lasting from sixty to eighty minutes and being marked, according to our recent studies, by changes in environment, fatigue, etc. The total acidity averages 97.2 in our series and it is markedly reduced, but does not disappear with atropin administration. The chemical secretion probably commences early but reaches its height later and completes digestion. During this active period, we notice (1) the relaxation of the perisystole and the inauguration of peristalsis, and (2) a change from the resting secretion to a pronounced secretion of much higher acidity. Furthermore, we can detect certain regulating mechanisms such as tryptic or duodenal regurgitation regulating acidity. This cycle is constantly changing as each factor comes into play. It is followed by the interdigestive phase characteristic of normal digestion.

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* Read before the Section on Gastro-Enterology and Proctology at the Sixty-Ninth Annual Session of the American Medical Association, Chicago, June, 1918

The stomach is never empty, and there is always physiologically active secretion, but the resting secretion or the residuum seen in the interdigestive phase is very different from the digestive secretion. The quantity averages 50 c.c., the total average acidity being only 30 and the free acid 18, while the presence of bile is much more constant (55 per cent); and tryptic regurgitation is almost constant. Instead of peristalsis, we have perisystole, tonal, and hunger contractions and a relaxed pylorus. It is the study of these phases so characteristic in health and altered by disease that yields us accurate information regarding gastric disease. All the motility changes only translate themselves by a diminution or increase in the interdigestive period.

We are now prepared to say that there is no one form of curve seen in health, but that the curve of the digestive period may be one of three kinds, depending on the type of individual, hypersecretory or hyposecretory. Further study of healthy persons only emphasizes the necessity for retaining these types. In a résumé of 842 complete curves on various foodstuffs with more than 20,000 titrations, we found that 383, or 45 per cent., exceeded 100 total acidity, and on that study embracing three years' work, we are prepared to state that no acid figures occurred in disease which could not be duplicated in health. In other words, we found that 45 per cent. of all responses in health showed so-called hyperacidity, while 42 per cent. of my ulcer series showed the same thing. In other words, there is no greater incidence of high acid figures in ulcer or in any other gastric disease than in health, a fact that raises the extremely important question as to whether an actual demonstrable hyperacidity ever does occur. We must face these facts squarely before we can make progress in this line. They are facts which may be verified and our ideas must be altered to meet them. Furthermore, we are prepared to state that hypersecretion in some form occurs in about 40 per cent of normal persons.

PATHOLOGIC VARIATIONS

In disease, every variation occurs from a total suppression of the gastric secretion to an exaggeration of all the phases. We might classify the elements into (1) those which are a modification of normal total acidity and free acid of the secretion, showing the presence of duodenal regurgitation, and (2) those which are frankly abnormal, such as blood, pus, mucus, certain organic acids, and pathogenic organisms constantly present. The study of normal digestion emphasizes one important point, namely, that at certain phases certain acidities and quantities of secretion are normal and at other phases these same figures are abnormal. For instance, instead of a coordinated curve after an Ewald meal with its height at the one hour and one and one-quarter hour point, we may have a total displacement of the curve, either a markedly exaggerated phase during the first hour or a slow initial phase, followed by pronounced findings at the end of the second hour. Study of pathologic curves shows that every variation of secretion may occur, instead of perfect evolution of digestion. There may be (1) a delay in digestion, (2) an acceleration in digestion, (3) a disturbance in secretory velocity resulting in hyposecretion or hypersecretion, and (4) alteration of digestion by the addition of frankly pathologic products, such as blood, pus and mucus.

We recognize that alterations may come through the systemic circulation (soluble toxins, bacteria) blood dyscrasias, resulting in altered mucosal conditions and altered secretory digestion, or through disturbances in the portal circulation (cirrhosis). These systemic conditions may stimulate or depress secretory activity. Again we know definitely that a lesion elsewhere in the gastro-intestinal tract (gallbladder, appendix) may increase the irritability of the vagus, inducing the secretory manifestations of vagotonia. In chronic gastritis we recognize as operative not merely the inability of the mucosa to form a complete secretion, but also the mechanism of neutralization of the secretion by the mucus. In ulcer we do not look for pathognomonic curves, for we realize that a nonobstructive ulcer gives a very different picture from pyloric stenosis with ulceration. In all forms there is a tendency toward vagotonia, pyloroplasm, hypersecretion, shortening of the interdigestive period, and increase in protein content. In duodenal ulcer, the most characteristic finding is that of positive blood at the phases of tryptic regurgitation. In a large group of duodenal ulcer cases there is present a late hypersecretion, accompanied by periodic regurgitation of duodenal material giving occult blood reaction. Gallbladder disease gives clean digestion and often high acidity without mucus, pus or blood, and when there is pericholecystitis, with adhesions to the duodenum, the adhesions closely resemble stenotic ulcer at the pylorus. However, there is a group of old gallbladder cases associated with duodenitis, in which a low curve with all the findings of true gastric infection may be detected. Appendicitis is most frequently accompanied by clean digestion, with high figures indicative of vagotonia. Cancer has as its characteristics the uniform and constant depression of secretory activity, together with the presence of its specific products, pus, blood, mucus, lactic acid, soluble protein, etc., each of which plays a part in the composition of the curve that is formed. These facts must be borne in mind. Nerve factors, circulatory toxins, the lack of building material, and direct local disease of the mucous membrane may all produce low acid curves, but they produce the curves very differently. The first and second each give a clean subacid curve, and the third is accompanied by elements such as mucus, pus and blood, which give a clue to its source. Let me illustrate: We can see in a certain anemia a low curve without any mucus, blood or pus; it is simply a subacid curve in anemia. The subacid curve in chronic gastritis is punctuated by the periodic secretion of quantities of mucus. In infectious gastritis, there is not merely mucus, but bacteria, pus and blood, and the same is true in case of carcinoma. Pericholecystitis with adhesions to the duodenum may give the same picture as contrasting pyloric ulcer, but blood and increased protein in the latter serve to distinguish it. We know that gallbladder disease, appendicitis, pancreatitis, intestinal adhesions and pelvic disease may all give reflexly vagotonia and the same gastric picture. It is the correlation of all the data which enables us to make the correct interpretation.

Some factors are important. The amino-acid content seems to run parallel to the curve of tryptic regurgitation. Pancreatic ferments or pancreatic regurgitation occurs independently of biliary regurgitation, particularly in the digestion of carbohydrates. With fats, both are likely to regurgitate.

In the analysis of blood, we attach great significance to the position and type of bleeding. Blood synchronous with periods of active tryptic regurgitation is characteristic of duodenal ulcer. Blood throughout the entire digestive phase of subacid cases is seen particularly in cancer and infected gastritis. Blood in the interdigestive period and not in the digestive cycle is likely to be swallowed blood. With pus we must distinguish between extragastric or swallowed pus and intragastric pus or that formed in the gastric wall. The former is always seen in the interdigestive cycle and is diagnostic; the latter is seen in both cycles.

The problems that confront us in the interpretation of gastric work are legion. Fractional analysis only emphasizes how many there are and offers a method for their solution. In the normal subject, we can produce high acid curves with meat, milk, low acid curves with fruit and vegetables, and we can produce an experimental subacidity or achylia with concentrated salt or glucose solution, or we alter the vagus and the sympathetic tonus by drugs and ductless gland preparations that alter the gastric response. Bacterial, chemical, neural, circulatory, and local mucosal disturbances can alter the gastric output, but only actual local organic disease can produce pus, blood, mucus and soluble protein bacteria.

Fractional gastric analysis already has an enviable record. It has emphasized the importance of the digestive and interdigestive cycles. It has enabled us to study the true residuum and to isolate and easily to diagnose swallowed suppurative material from infected processes higher up. It has enabled us to trace exactly the trend of digestion and depict the factors occasioning disturbance. It has opened up new chapters on psychic secretion, automatic regulation of acidity by tryptic regurgitation, and protein curves, and it has emphasized the fact that no one can guess the nature of gastric work but only painstaking technic will reveal all its details.

TOXINS AS DEPRESSANTS

Toxins of a bacterial nature usually act as depressants to the secretion. There are certain infections in the nose and throat, however, which unquestionably induce increased vagus tone and result in an increased secretion. In the analysis of the gastric curve, many points must be taken into consideration. Anomalies in the gastric secretion may be simply a perversion in secretory output but without the addition of evidence of local disease. For instance, gallbladder, appendiceal, intestinal, pancreatic and nervous conditions may give rise to well marked changes in the curve, either a prolongation of digestion, late hypersecretion, or other changes. But as soon as we have the addition of mucus, pus, blood, or bacteria, we are probably dealing with a pathologic process in the stomach itself.

Take, for instance, the question of delayed digestion, in which evolves a low, slow curve that is clearly pathologic. This curve is encountered in cases of chronic gastritis, late pulmonary tuberculosis, a group of anemias, chronic parenchymatitis, nephritis, a small group of old ulcers, and finally in a very large group of gastric cancer. In each case the mechanism is different, although in all there is the underlying disturbance in the mucous membrane, possibly primary in certain forms of gastritis and carcinoma, and clearly secondary in anemias, nephritis, hepatic disorders, cirrhosis and tuberculosis. In the cancer group, we see a disproportionate reduction in free acid and the presence of pus, blood, mucus, lactic acid, etc. In chronic gastritis we see simply a disproportionate amount of mucus. In some of the anemias and in nephritis there may be no increase in mucus, and free acid runs proportionate or parallel to total acidity. A cure may follow local treatment, it may follow treatment directed to the heart or kidneys, or again, curiously enough, these secretory delays may suddenly clear up after removal of a focal infection in the teeth, the sinuses, the tonsils, etc. I have case records in which the entire response was altered after such procedure. The whole problem is so complex that painstaking research alone will solve it.

We have been able to show that the delayed curve of acidity may come about (1) through a delayed elaboration of secretion on the part of the mucous membrane, (2) through a strong duodenal regurgitation neutralizing an apparently normal secretory output, and (3) through the neutralization of the secretion by pathologic products, such as mucus, pus and blood. The first form is accompanied by no evidence of either tryptic regurgitation, or mucus, pus and blood, and may be due to anemias or to circulating toxins, or may be the result of disease elsewhere altering the circulation of the nervous supply. The second form is shown by the evidence of regurgitation in laboratory study. The third form belongs to the group of true gastric infections and cancer. All of them are susceptible to careful analysis.

CONCLUSIONS

1. Fractional gastric analysis alone can reveal the evolution of gastric digestion. Gastric digestion, whether normal or pathologic, consists of a series of constantly changing phases. Certain phases are normal, certain are obviously pathologic.

2. Normal gastric physiology consists in a rhythmic series of cycles in which we may differentiate the digestive and the interdigestive periods. In health, they succeed each other regularly; in disease, their sequence is seriously interfered with.

3. The digestive cycle is the response of the stomach to a definite stimulus. The response is partly psychic and partly chemical, but in its essential characteristics, it differs from the interdigestive phase.

4. There is always a physiologically active secretion in the stomach but the characteristics of the two periods are very different. The digestive secretion persisting into the interdigestive period is pathologic.

5. Our studies of healthy men indicate that there is no acidity in disease which cannot be encountered in health, and the diagnostic value of high acidity must be very carefully worked out. Forty-five per cent. of more than 800 cases (normal) gave a total acidity of 100 in excess. Normally, we point out three different secretory types.

6. Pathologically every possible variation in secretory output occurs. At present it seems that there are many possibilities in the analysis of each variety of curve. It is at this point that circumstantial evidence by the study of the protein curve, pus, blood, mucus, bacteria and tryptic regurgitation may throw light on the subject. In every case the extragastric as well as the gastric causes must be reviewed.

7. The gastric response may be shortened, delayed or exaggerated. It may be accompanied by the most

marked variations in secretory and acid concentration output. It may be altered by the addition of pus, blood, mucus and bacteria in every possible way, and these variations may occur only at certain portions of the curve, emphasizing the necessity for complete examination.

8. The investigation of psychic secretion, tryptic and biliary regurgitation, hypersecretion, protein concentration and secretory velocity, and of the evidence of pathologic material is full of promise.

ABSTRACT OF DISCUSSION

Dr. A. F. R. Anderson, Brooklyn: A study of findings on fractional examination of gastric contents in about 800 patients leads to the following conclusions: The only curve of acidity which is of itself of absolute value in diagnosis is that found in achylia gastrica, a straight base line, representing free hydrochloric acid, running along the zero line, and a slightly varying curve of total acidity. The achylia of malignancy is quite often found to be associated with a high total acidity. The reflex type of curve is also of considerable value as indicating an inflammatory condition somewhere in the abdomen or pelvis, causing a reflex manifestation in the stomach. A finding which we consider typical of duodenal ulcer is the occurrence of blood and bile coincidently during the fractional examination. Trauma from the tip of the tube catching in the pylorus and being pulled on must be excluded, but sufficient trauma to cause bleeding is exceedingly rare. Pyloric obstruction will show the normal overnight residue and the usual findings of carcinoma or of ulcer. After gastro-enterostomy for ulcer, bile is usually present in considerable amount, and when blood is also present it may mean persistence of the original ulcer, or the presence of a jejunal ulcer. Gastric motility can be determined more accurately by the fractional method than by usual routine roentgen-ray examination. Cases of gastroptosis showing a normal or even a slightly increased motility by the test meal examination often show much residue six hours after the usual sized barium meal. When, subsequently, a smaller barium meal is given, normal emptying may occur.

Dr. William Van Valzah Hayes, New York: The practical question that comes up is, How can we, as gastro-enterologists, employ this sort of technic in the ordinary case? There are many pros and cons on the subject, and up to date I have not used the method very frequently. In the ordinary case, in addition to a careful history and careful physical examination, examination of the stool, etc., we want to find out what the stomach does in the early and in the late stages of digestion. Are we going to put in a tube which will make the patient uncomfortable, which will cause a continuous flow of mucus and other secretions, and more or less obscure certain phases of the gastric activity, or can we, with less trouble to the patient and to ourselves, get the data we need? I believe that in the average case we can get these data by simply giving the test breakfast and taking it out an hour later. Then the following day give a duration test, *i. e.*, two soft boiled eggs, a roll and a glass of water. Three and a half hours later use the tube to see whether the stomach has emptied itself as it should have, or whether there remains a considerable amount of gastric contents, with high acidity and possibly regurgitated blood or bile from the duodenum. Diagnosis is nearly always possible in this way.

Dr. Frank Smithies, Chicago: This is a practical method in the diagnosis and treatment of gastro-intestinal ailments. It seems quite impossible that apart from the diagnostic significance of these curves, an individual should fail to appreciate the importance that some of these curves carry with respect to treatment. One of the main points brought up during the past few years is the differentiation of gastric and duodenal ulcer. These curves enable us to differentiate quite easily the postpyloric from pyloric or antral ulcer. It seems that frequently it would be almost impossible in any other way to differentiate this class of case. Regarding the indications for treatment: There is no rule of thumb method of treatment of ulcer of the stomach or duodenum. There must be intense individualization of treatment. The treatment and the cure do not depend on anomalies of gastric secretion. Other factors come into play. The causes of ulcer indicate that in treatment we must first look to the individual factors in the production of ulcer. Afterward, if we give any medication, we must give it according to our knowledge of what the patient's stomach is doing. In many cases a great deal of medication is not needed. The work of Crohn bears out some of Dr. Rehfuss' observations, namely, that in the giving of alkali we very often cause more harm than good. We simply defeat nature in its attempt to secure in the stomach a restoration to normal.

With regard to the mucus cases Dr. Rehfuss mentioned: In these cases, where we have early secretion by the fractional method, within the first half hour or hour, and then have an accumulation, of a great deal of mucus, we are simply dealing with an instance where the gastric glands are easily fatigued, and the condition represents a form of gastric fatigue, with mucoid secretion instead of the specific secretion of that gland. We have seen it in patients who have been given great quantities of alkali. It is apparent from a knowledge of gastric physiology that what alkali does is simply to urge the stomach first of all to restore the natural reaction of the stomach contents, namely, faintly or definitely acid. To do this it must overcome a foreign body, namely, the excess alkali. It does this by first producing a great deal of acid, then there follows physiologic fatigue, namely, an excessive secretion of mucus, which has to be washed out. If more alkali is given, in the end, the stomach does not produce acids. In periods varying from six to twelve days there is no acid secretion whatever. The glands are putting out a great quantity of mucus. This indicates mucoid degeneration, or physiologic fatigue of the cell.

Dr. Martin E. Rehfuss, Philadelphia: Regarding Dr. Hayes' suggestion that this seems to be a little too extensive a procedure, a great majority of the men I have met do not think it is at all extensive. I do practically nothing else. My assistants are trained. I do not pass the stomach tube more than a few times a week. You can train nurses to do every little detail covering this work. It is a question of organization to do this work. It is absolutely impossible, by simple examination, to predict anything regarding the stomach. I have seen any number of people who were told that they had a normal stomach after a single examination.

Dr. Smithies mentioned glandular fatigue. We found that in the normal, healthy individual we can give a meal and develop a curve, and give a meal immediately after, developing the same curve, showing there was no glandular fatigue. However, we took students around the examination period, and not only found that we could produce physiologic fatigue, but also a form of nervous fatigue. We found a man who could not coagulate milk, and when he came back after a vacation the milk was beautifully curded, which shows the effect of giving it to him in that way.

The Asset of Good Health.—I am heartily in favor of this measure [bill for an addition to the Hygienic Laboratory], because it helps in the preservation of health. For years and years the medical men of the world have been trying to impress on the people this fact, that good health is the most valuable asset we possess. It is often said on the floor of this House that this war, as horrible as it is, will teach the American people many valuable lessons. And there is no doubt in my mind but that one of the most valuable lessons that will be taught in this war will be the importance of preventing disease. Today we understand as we never understood before that it it necessary not only to preserve the health of our boys on the firing line, but it is also equally necessary to preserve the health of the people at home, who are united and working earnestly to produce the necessities for these boys on the firing line. I hope that the American people especially will never forget this lesson, and that from now on they will be willing to appropriate the money necessary, so that medical men can experiment and carry on the work that is necessary in order to prevent disease, and not wait until people are sick and then spend ten times more to be cured.—Mr. Lazaro, *Congressional Record*, Oct. 2, 1918, p. 11944.

RENAL COMPLICATIONS OF PREGNANCY FROM THE STANDPOINT OF THE UROLOGIST*

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The important rôle played by the kidneys during pregnancy has long been a matter of serious thought. Recent investigations of metabolism and kidney function have broadened the general knowledge of this subject, but very little has been added by the urologist. The more careful study of pregnancy by the urologist in association with the obstetrician should lead to a diminution in the incidence of renal complications and a more rapid recovery, with less serious sequelae when lesions are found to exist.

The patients whom I have seen during pregnancy have all presented well developed complications, only then recognized. In these cases, one fact has appealed to me, namely, that too little attention is given to the individual woman when she first presents herself to the obstetrician. This fact holds good for private patients, who usually come for examination early in pregnancy, as well as for hospital patients, who present themselves late in term or when in labor. Less may be accomplished with the latter than with the former class. The environment, habits of life regarding exercise, eating, drinking, and the condition of the gastro-intestinal tract all receive little consideration. A complete examination, including the mouth, teeth, tonsils, accessory sinuses, chest and abdomen; careful palpation of the kidney and other viscera, coming lastly to the pelvic organs, should be made but seldom has been made. Often there has been a single analysis of a voided specimen. A chemical and bacteriologic examination of a catheterized specimen of urine, and, if the patient presents any urinary symptoms, a complete urologic examination should be but has not been made. The taking of pelvic measurements, the palpation of the uterus and adnexa, the examination of a voided specimen, and a few words of advice, will not go far toward anticipating and preventing renal complications of pregnancy.

The renal function is such an important factor during pregnancy that it is right to look on the pregnant woman in one sense as a urologic case. This is true to the extent of warding off complications by advice as to the proper management of the case, and actual participation in and continued observation of those presenting renal complications.

ETIOLOGY

Why are the kidneys particularly susceptible to lesions during pregnancy?

1. Being organs of elimination, they are called on to eliminate the toxins of the fetus as well as of the mother.
2. The skin is less active than normal, rendering little assistance.
3. The diminished activity of the woman leads to less activity in the organs of metabolism, poor digestion and sluggishness of the bowels, thus increasing the amount of toxic material thrown on the kidneys to eliminate.
4. The increase of toxic products passing through the kidney causes kidney irritation, which leads to congestion, thus producing an important predisposing factor to infections.
5. The lowered resistance of the patient allows focal infections to become more active.
6. Coexistent with the foregoing, more bacteria are thrown into the blood stream, and the kidneys, already congested, are fertile soil for infection.
7. Intra-abdominal pressure mechanically interferes with the normal function of the abdominal viscera.
8. When a preexisting kidney lesion is added, such as a renal or ureteral anomaly, renal tumor, or malposition of the kidneys, a chronic infection, chronic nephritis, or a calculus, as well as ureteral lesion interfering with drainage, the urologic aspect of the case becomes most important. Should not the kidneys be relieved of the load so far as possible? How may this be accomplished without a complete examination of the patient and attention to all details of bodily activity?

Recent investigations have given evidence to show that a large percentage of renal infections are hematogenous in origin. A case recently observed clearly demonstrated this point. The woman, seen during her eighth month of pregnancy, was septic. I was asked to see her because of the diminished urinary output, and the presence of large numbers of streptococci and colon bacilli in the urine. Blood cultures showed the same organisms. She died of general sepsis. At necropsy, conducted by Dr. Losee, of the Lying-In Hospital, multiple miliary abscesses were found in the substance of each kidney, sections of which showed the same organisms, while the kidney pelves presented no lesions.

While the transmission of infection from the colon or the bladder to the kidney by lymphatic extension or directly to the ureter from a diseased appendix or a broad ligament infiltration or along the ureteral mucosa when there is a deficient vesico-ureteral valve, is possible and probably does occur, these cases are rare.

The most important element, next to the supply of bacteria to the kidney, is a lowered kidney resistance from the causes already enumerated, or interference with kidney drainage. Pressure on the ureter from the fetus has been given as an important factor in this connection. The ureters, particularly the right, have been found dilated and filled with urine in about two thirds of the gravidae coming to necropsy. This has been attributed to torsion, stretching or kinking of the ureters due to the enlargement and dislocation of the pelvic organs, but not to compression, since the specific gravity of the pregnant uterus is said to be equal to that of the intestinal mass. The pressure in the pelvis of the kidney is only 10 mm. of mercury, so that slight causes may lead to the stopping of the flow of the urine in the ureter.

Ahlberg found bacteriuria in 15 per cent. of pregnant women. Neibel found the urine sterile in only 25 per cent. of cases, demonstrating the presence of streptococci, staphylococci, and colon bacilli. Bacteriologic examination of the urine of all pregnant women should be made. The establishing of the relationship of bacteriuria to eclampsia and nephritis would be valuable.

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*Read before the Section on Genito-Urinary Diseases at the Sixty-Ninth Annual Session of the American Medical Association, Chicago, June, 1918.

*Because of lack of space, this article is abbreviated in The Journal by omission of the bibliography. This will appear in the Transactions of the section and in the author's reprints.

The majority of patients whom I have seen have presented active symptoms due to infection. If there was drainage, these symptoms were vesical (frequency, burning, painful urination); if drainage was absent, the symptoms were pain in the flank, tenderness in the costovertebral angle on one or both sides, and often tenderness in front, and in some cases the kidney could be palpated. When drainage is poor, the patient has an elevation of temperature, which is often associated with a slow pulse.

EXAMINATION AND RESULTS

Cystoscopic examination of a pregnant woman is seldom difficult. The patient is usually seen between the fourth month and term. The bladder is flattened from above downward, on account of pressure on the fundus from the enlarged uterus. Enough fluid must be injected into the bladder to elevate the uterus from the trigon, when with a close-vision cystoscope with the beak well depressed, the ureteral orifices are easily distinguished and catheterized. When the ureteral catheter is passed, a moderate amount of pressure may be necessary to advance the catheter on one or both sides. In some cases there is a tendency to an obstruction, and whether due to torsion or kinking of the ureter, or pressure on the ureter, it is found more often on the right than on the left side, and between 10 and 20 cm. from the bladder. When the catheter enters the renal pelvis, there is often a rapid flow of cloudy urine or thick pus, which diminishes in rapidity until it comes down to normal excretion. Complete ureteral obstructions were encountered in the series examined, and demonstrated to be due to calculus, kink, and pressure on the ureter from without. Roentgenograms were taken with catheters in position in certain cases, and in the complete obstructions a thorium injection was made.

In 90 per cent. of the cases observed, the infection was due to the colon bacillus. The bacilli were found on both sides in 75 per cent. of the cases, but in all the infection was more severe on one side than on the other. The kidney function was diminished in all.

A routine pyelo-ureterogram has not been justifiable, owing to the condition of the patients.

It has been my practice to do as little manipulating as possible in these cases. In the infections the patients are often acutely ill, and no more should be done than is necessary to give immediate relief of the symptoms. This means establishing drainage.

UNUSUAL CONDITIONS, WITH ILLUSTRATIONS

Several unusual conditions were encountered, and I shall enumerate them briefly.

One patient, a woman aged 26, presented a unilateral chyluria, with no demonstrable lesion. Aside from the presence of a large amount of chyle in the urine from the left kidney, the examination and pyelograms were negative. This condition had been present when she first menstruated and during the puerperium with her two previous children, but had appeared at no other time.

A woman four months pregnant developed pain in the right upper quadrant, and a firm, irregular mass appeared. A catheter was passed into the right renal pelvis, resulting in a rapid discharge of clear urine, which was free from infection. A pyelogram showed a hydronephrosis. An abdominal exploration revealed a large fibroid attached to the right side of the fundus of the gravid uterus, which pressed on the right ureter. The fibroid was removed, with relief of symptoms, and the patient went to term.

Urgent bladder symptoms during the fourth month of pregnancy were found to be due to a pyelonephritis occurring in a pelvic kidney, in a woman who had previously complained of no urinary symptoms.

Profuse hematuria, localized as unilateral, occurring in a woman five months pregnant, was not relieved by pelvic lavage, but ceased two weeks after the uterus was emptied. Another case of hematuria, the source of bleeding being the left kidney, came under observation when the patient was two months pregnant. Complete urologic examination showed deficient function of this kidney, but no evidence of infection. The patient had a positive Wassermann reaction. The bleeding ceased after the administration of arsphenamin.

Bilateral polycystic kidneys were demonstrated in a patient five months pregnant, who had not previously noticed any urinary or abdominal discomfort.

A ureteral calculus causing ureteral obstruction was found in two cases during pregnancy. In the one, the calculus was passed following cystoscopic manipulation. In the other the calculus was removed, the patient going on to term.

Sharp angulation at the ureteropelvic junction was demonstrated by pyelo-ureterogram in three cases in which there was a complete blocking of the ureter.

I have drained a perinephritic abscess in two patients immediately following delivery, the infection of the kidney arising during pregnancy, but not being recognized until after confinement.

Pyonephrosis, with an acute infection occurring during pregnancy, and renal calculi have been noted in two cases, in both of which the patients were temporarily relieved by pelvic lavage and were carried to term.

More than 90 per cent. of the cases observed have been acute infections, most marked on one side, occurring during the last three months of pregnancy. The patients were suffering from absorption, high temperature, pain in the side, and urinary symptoms. These patients were all catheterized, given pelvic lavage, and in many the ureteral catheters, one or both, were retained from twenty-four to forty-eight hours. All were relieved and went on to term.

A typical case of this group was a woman, aged 25, with a history of good health until this, her first pregnancy. During the first two months she suffered from severe nausea and vomiting, resulting in irregularity of her diet. She remained in bed most of the time, became constipated, and during the third month had a stool only after taking a cathartic, often going three days without an evacuation of the bowels. During the fourth month she developed frequent and burning urination. When I saw her she had had a chill, followed by fever and slight pain in the back, two days later, tenderness in the loin, and more urgent urinary symptoms. Cystoscopic examination showed the bladder intensely congested. There was retention of urine in the left renal pelvis. This urine contained pus and colon bacilli. The kidney function was diminished. The right kidney showed a milder infection. Pelvic lavage, with retention catheters in the kidneys for thirty-six hours, resulted in a drop of temperature from 103 F. to normal, and complete relief of symptoms. The knee-chest position for the relief of pressure for twenty minutes to an hour a day, a second pelvic lavage at the end of three weeks, and careful attention to the gastro-intestinal tract, gave lasting relief, and the patient went to full term. Six months after confinement specimens taken from each kidney showed only a diminished function of the left kidney. This woman became pregnant a year later. Most careful attention was given to diet, exercise and bowels from the outset. Once during the third month, slight urinary symptoms appeared, and lavage of the kidney pelvis was given at once, with complete relief. The patient went through this pregnancy with no further complications.

In hospital service, patients often enter the hospital in labor. They seem sicker than normal, and not until after delivery is a renal infection discovered.

Not only is it important for the immediate welfare of the pregnant woman to give her all the relief possible when a renal infection exists, but for her future health. If one takes a complete history of a woman applying for relief of urinary symptoms, very often is it found that the active symptoms date from pregnancy. The possibility of some earlier lesion even from childhood, such as nephritis complicating an infectious disease, or a renal injury, should be ascertained, the existence of which may have rendered the kidney more vulnerable during pregnancy.

The possibility of preexisting but symptomless disease in the kidney, or of actual lesions as enumerated, giving lowered resistance, may play an important rôle in predisposing to kidney lesions during pregnancy.

Movable kidneys due to poor drainage are particularly prone to infection. A kidney previously normal when congested from the irritation of toxic products from the intestinal tract, and of large numbers of bacteria, develops a pyelonephritis which may or may not be recognized during pregnancy, but which leaves the organ permanently damaged to a greater or less degree, leading to future trouble. Therefore, not only should lesions be recognized and immediate relief be given to carry the woman through pregnancy, but after the pregnancy she should be observed until the maximum amount of permanent benefit has been derived by palliative or radical measures. Unquestionably many serious kidney lesions of later life will thus be avoided. Once the seat of an infection, a kidney is always more vulnerable. Few women who have gone through a pregnancy have the same general tone as before. Relaxed abdominal muscles, impaired perineal support, greater tendency to constipation from the foregoing causes, and a more sedentary life predispose to future renal infections, and many of the cases of frequency of urination seen in women later on in life are but relapses of the old infection or reinfection in kidneys once damaged during pregnancy. How easy it is for a bladder, possibly with weakened support, emptying poorly or subject to pressure from pelvic displacements also secondary to pregnancy, to become infected from the urine from such kidneys, and to cause distressing symptoms for years!

TREATMENT

The treatment resolves itself, first, into prophylaxis. Such infections may be prevented by impressing on the obstetrician and general practitioner the important rôle of the kidneys during pregnancy. He should go into the history of his patient more carefully, the catheterized urine should be examined bacteriologically as well as chemically, and any variation from a normal condition should be an indication for a complete urologic examination.

Closer attention should be given to the metabolism of the patient, especially in the intestinal tract, thus eliminating as fast as possible the amount of toxic products of intestinal putrefaction thrown on the kidneys, not by the administration of cathartics, but by exercise, diet, and plenty of fluids. This also means diminution in the number of bacteria passing through the kidneys. In this connection, the importance of eliminating focal infections, whether oral, nasal or otherwise, cannot be overestimated.

When a pathologic condition in the urinary tract has been found which might predispose to a kidney infection, it should be eliminated early in pregnancy if possible. Patients as a rule withstand treatment and operation during the early months of gestation with remarkably little reaction. Whether or not a woman should attempt to go through a pregnancy with a renal lesion present, thus subjecting the kidneys to the added strain and possibly infection, is a question to be decided in each case.

Renal anomalies, tumors, calculi, and infections come under this consideration, and some surgical measure—nephrectomy or nephrotomy—may be advisable at once.

In the presence of such lesions, relief of the kidney to the extent of diminishing its load is certainly indicated, and consists of the most careful attention to details.

When a kidney infection is already present, the indications are to give relief from the toxemia by establishing drainage, and to cut off the supply of toxins and bacteria. This means kidney drainage with the ureteral catheter, retention of the catheter if necessary, lavage of the kidney pelvis, free fluids by mouth, colonic irrigation, and lastly, urinary antiseptics. If relief is not obtained, termination of the pregnancy is to be considered, and, lastly, some operative precedure, such as drainage of the kidney or nephrectomy, if one kidney is the source and relief cannot otherwise be obtained. Following immediate relief, the patient must have the closest attention during the remainder of the pregnancy to prevent a recurrence of the acute infection. A shifting of the intra-abdominal pressure gained from the knee-chest position is valuable and all other measures noted in prophylaxis are important.

When a patient has passed through the labor, she should be treated as a urologic patient until all damage has been repaired to its fullest extent by treatment or operative procedures. The possibility of future trouble must always be considered and guarded against.

ABSTRACT OF DISCUSSION

Dr. Herman L. Kretschmer, Chicago: My experience has been that these patients come to us very late. The general practitioners who carry these women through pregnancy do not seem to realize the importance of watching their condition carefully and of making routine examinations of the urine. Generally, when we are consulted, the patient gives a history of bladder distress extending over varying periods of time. They are often treated for retained placenta, sepsis, malaria, appendicitis, etc., and the real cause of the symptoms goes unrecognized. Finally, the urologist is called late in the course of the patient's illness, whereas he should have been called in at an earlier stage. In many of the cases I have made a special effort to elicit a history of previous bladder distress. I think that many of these cases are a "lighting up," by reason of the pregnancy, of conditions from which the patient was suffering before becoming pregnant. I found that some of them had had pyelitis in infancy. Several patients have referred back to their school days when they would tell that they had had bladder distress. In several cases patients had indefinite histories; several had been subjected to the removal of the appendix, with or without temporary relief; so that often the real cause of the trouble is not recognized.

I was interested in the effect of pregnancy on pyelitis in patients whom I cured, and who became pregnant again. I have had occasion to see two or three of these women. When discharged they were cured, as their urines were sterile and free of pus, and they did not develop pyelitis in subsequent pregnancies. The importance of examinations before, during and after pregnancy cannot be emphasized too much.

In approximately 90 per cent. of cases the infection was due to the colon bacillus. In one or two a pure culture of streptococci was obtained. All patients had residual urine, in the kidney or kidneys.

One point deserves special emphasis, and that is the question of treatment. I agree entirely with Dr. Bugbee about prophylactic treatment and about carrying these patients through till they are well. Often they go to the family doctor or to the obstetrician, who knows but one treatment, and that is to empty the uterus, because following this procedure the acute symptoms disappear. These patients are not cured because there is nothing done to cure the infection. At least half of my cases were cases seen in consultation with the obstetrician, and in each and every instance the obstetrician advised immediate emptying of the uterus; and in each instance this procedure was not carried out and the patient went on to full term without any operation.

Dr. John R. Caulk, St. Louis: In every locality we seem to have the same trouble with the obstetrician and the general practitioners. We must train them to realize the importance of renal complications during pregnancy, and particularly infections; and teach them to protect their patients by investigation before and during pregnancy in order to avoid focal infections of various sorts. Most of these women probably have had pyelitis before. They may have had an infected kidney or renal retention. Retention more than anything else that predisposes to these infections during pregnancy, and the rapidity of cure depends a great deal on the duration and the extent of the retention, and how much the musculature of the pelvis has been overstretched, just the same as in bladder retention. It is surprising how quickly a kidney which has been overdistended for some time will rapidly come down to its normal capacity, and the temperature and toxic processes will abate. We must get the obstetrician acquainted with the fact that he must quit ascribing everything to pyelitis and giving hexamethylenamin. We have not appreciated the value of ureter catheter drainage. It is not only applicable to pregnancy, but can be applied to all acute renal retentions. In cases with pure pus exuding from the ureteral orifices, with no function on that side, and the other side functioning normally, one unblocking will at times effect a cure. It is surprising that the kidney does not require surgery, resuming its function within a week or ten days. A kidney with retention which shows a very slow phenolsulphonephthalein output, which looks as though it should be attacked surgically, will often come back to normal usefulness by catheter drainage. There is no question that we cannot only save the kidney but the individual, and we will not have the operations or abortions we are having right along.

Dr. V. D. Lespinasse, Chicago: This discussion seems to have drifted more into a discussion of infections of the kidney that occur during pregnancy and are exacerbated by the presence of pregnancy. I have been much interested in the kidney of pregnancy from the standpoint of true renal complications without infection. We were enabled to reproduce this noninfected kidney of pregnancy experimentally by making a symbiosis between a small individual representing the baby and a large individual representing the mother, completely joining their circulations; and in that way we have obtained some very beautiful specimens identical with eclamptic organs. The organs (kidney, liver and spleen) show a cloudy swelling, focal hemorrhages and complete degeneration. When you do this with individuals not of the same blood group you have a much greater effect, a much larger hemorrhage. These changes are not limited to the kidney only, but involve the liver and the spleen—a most intense poisoning. This irritating substance, characteristic of pregnancy, is the material that causes all this lighting up of old and the development of new infections. The kidney, spleen and liver have been compromised, their blood supply is interfered with, and if a colon bacillus is in the neighborhood it localizes in the kidney and produces a so-called pyelitis.

Dr. A. E. Goldstein, Baltimore: Ever since Dr. Caulk's paper two years ago on these cases of pyelitis in pregnancy I have been interested from the standpoint of renal insufficiency, particularly as to the blood urea. In pyelitis there is retention and also decreased function. By the use of ureteral catheters, allowing them to remain in place twenty-four to forty-eight hours, the blood urea decreases and the phenolsulphonephthalein increases, thereby avoiding forced deliveries in many cases of pyelitis of pregnancy.

Dr. Henry G. Bugbee, New York: I had a patient who gave a history that in thirteen days she had not passed any urine. Three weeks previous to the suppressing she had had a cauterization of the cervix for carcinoma. I found on examination that there was no urine in the bladder and that both ureters were obstructed about 2 c.c. from the vesical openings. We operated on this woman and found that a cicatrix had formed which involved both ureters, closing them off completely. Each ureter was about the size of one's thumb. We cut off each ureter at the lower end as close to the cicatrix as possible, and then implanted it into the top of the bladder. Her kidneys functionated at once and have continued to ever since.

IMPORTANCE OF BEDSIDE INSTRUCTION IN THE TEACHING OF THERAPEUTICS

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There is, I believe, a gap between the instruction given in materia medica, pharmacology and therapeutics on the one hand, and the requirements of medical practice on the other, which, were it filled, would assist in making therapeutics even more valuable than at present. Let me recall the detailed instruction given to students in the comparatively few things employed in the surgical treatment of patients. An example is afforded by the instruction in the use of splints and bandages. The students are not only taught in a general way how and why these are used, but apply them repeatedly, the work being done in small sections. Students should be trained in a similar manner in the medical treatment of patients. The power in the hands of the physician does not display itself so dramatically as that in the hands of the surgeon, but it is no less essential, and opportunities for its use are more frequent.

Not only must a subject so unusually complex as therapeutics be presented in lectures and recitations, but also more opportunity should be afforded for bedside instruction, given by a physician who has had a training in pharmacology, as well as a clinical experience. To illustrate, let me describe some exercises of the character I would advocate, which I gave about thirty years ago. The students were taken into the wards in small sections, not exceeding eight in number, and standing about the patient's bed were given the diagnosis, together with a brief outline of the case. They were then told to consider that the patient had come to them for treatment, and, after any questions which they wished to ask had been answered, were required to write, on blocks of paper which had been distributed to the section, what they would do if the patient were their own. This was not limited to the use of remedies, but included directions as to diet, occupation, habits of life, etc. These outlines were handed to the instructor, and as some were ready sooner than others, there was sufficient time for him to look over each paper without delaying the exercise. The papers usually fell into three groups: one in which the students had done well; another in which they had outlined a treatment which was incomplete; and a third in which they had made serious mistakes, for example, in choosing the wrong remedies, or in giving them in an amount or in a way which would fail to be of any value, or in such a way or such an amount that harm might be done. Comments were made freely by the instructor, so that all received the benefit of what was good, as well as the warning involved in the mistakes made. As names were not mentioned, the comments were impersonal and could thus be made more emphatic. A most convincing evidence of the need of instruction of this nature was afforded by the character of many of the answers written at these exercises. After the students had done their best, and had been told why some of their directions should not be followed, they had an opportunity to see how the physician met the situation. At subsequent visits the results of treatment could be noted.

In these exercises the instructor, when prescribing a laxative, a hypnotic or an analgesic, for example, was able to recall briefly to the minds of the students the important members of the group from which it was chosen, and give the reasons for his choice, why it was especially adapted to the patient's condition, and the precautions which should be taken to promote success and avoid harm. In order to emphasize still further the clinical side, the final examination in therapeutics included not only the usual written examination, but also an oral examination, which gave a better opportunity to bring out the proficiency of the students on this side of the subject.

In connection with the exercises described above, but in larger sections, the students had two or three others in which they were shown how a hot-air bath should be given, methods of administering remedies, of feeding, etc., and also some demonstrations by trained nurses. A young practitioner recently confided to me his perplexity when, as a house officer, he was told to give a patient a hot-air bath; he had never seen it done and did not know how to go about it. For a medical student to have an opportunity to see such demonstrations once, with explanations, is sufficient.

This method of instruction, namely, requiring each student of a small group at the bedside to state what he considers the proper treatment for the patient, under the oversight of an experienced physician who has had a training in pharmacology, is not used in our medical schools, so far as I can judge from the catalogues of more than twenty of our best schools. Incidentally, I noted that in more than one half of these there was no professor of therapeutics. This subject is one of the most important in the course, and every medical school should have, I believe, such a professor, who should be in touch with all instruction concerning medical treatment in the school.

Let me quote here a sentence from a statement made about thirty years ago, as a result of my experience with this method, a copy of which I came across recently:

> I believe that bedside teaching of therapeutics is of the first importance to students, to practitioners and to the community, that no other method is so well adapted to show students how the obstacles in the way of giving relief to patients are to be overcome, or to have the practitioner know how to distinguish between what is of service to the patient and what is harmful, to have him appreciate the dangers of new or absurd methods of treatment, and understand how to carry out safely and advantageously the many means of relief which are at our command, and of which it is sometimes very culpable for the practitioner to be ignorant.

This method gives the student an opportunity to realize the limitations of treatment, to appreciate the need of judgment and courage to use a powerful remedy in such amounts and in such a way as the occasion demands, and to gain a sense of values, that is, to see the problem of treatment in perspective, a difficult thing for many minds to acquire in any subject. It also offers another opportunity for joining the experimental method which prevails in the laboratories of chemistry, physiology and pharmacology, with the observational method for which the clinic affords such a wide scope, and leads the student to form habits of thought which make him a better practitioner and more truly a professional man.

In didactic teaching it is impossible to present the subject of therapeutics in a manner suited to the minds of all members of a large class; probably only a minority of them are reached. On the other hand, with small sections, at the bedside, the instructor comes in contact with the individual student and his difficulties, and may thus appreciate what he has failed to grasp. It is an advantage to have the bridge that connects the teaching of therapeutics with its application in practice built and used in the medical school, where the student can have assistance in this difficult task, rather than that unaided he should attempt its construction out of what he has heard in his lectures and recitations on the one hand, and his clinical inexperience on the other.

My plea is for a careful, painstaking rehearsal at the bedside by the student of what he is to do as a practitioner. Let him first be trained without taking responsibility, and when the time comes, this training will help him to give a good account of himself in his fight against disease, and to choose and carry out the proper measures.

The Nightcap.—W. J. B. Selkirk in the *Lancet* (London), Sept. 7, 1918, sets forth the advantages of the nightcap (not the liquid one) for the promotion of sleep. He believes that our grandmothers and grandfathers did not wear the nightcap as a matter of vanity, but that their experience proved that it was an aid in the wooing of Morpheus. He says this experience is confirmed by that of soldiers in the present war who wear the knitted helmet in camp and billet and dugout, and who find its warmth most soothing and comforting and promotive of sleep. He says it might be used with benefit by civilians suffering from insomnia not of gross organic origin. In addition to keeping the head warm, especially for those whose natural head covering has become sadly thinned or has disappeared for the most part, the cap or helmet also acts as a sleep promoter by shutting out extraneous sounds, thus helping to decrease the intensity of sense impressions which distract the would-be sleeper from the work in hand. In this connection he calls attention to the custom of soldiers (and many civilians too, perhaps) of imitating the habit of the dog which sleeps curled up, with his nose covered, and of the bird which sleeps with its head under its wing, in pulling the blanket completely over his head to facilitate sleep. In this manner he not only keeps his head warm and shuts out disturbing noises and other exciting sense impressions, as by the use of the nightcap, but by rebreathing his own carbon dioxid he half anesthetizes himself so that he sleeps soundly and wakes slowly, even passing through a more or less confused phase resembling the waking from a brief anesthetic state. While not to be recommended from the standpoint of healthful, refreshing sleep as in fresh air, this habit does promote sleep as does the now discarded nightcap of our grandparents.

THE PROBABLE ENDOCRINE ORIGIN OF PEPTIC ULCER *

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The consensus of opinion is that chronic ulcer in man develops from the acute ulcer, and that the acute ulcer must necessarily be preceded by an initial lesion. Once the initial lesion is formed, its further development through the various stages into the chronic ulcer is attributed to the corrosive action of the hydrochloric acid of the gastric juice. However, intrinsic causes, such as the mechanical irritation of food on the ulcerated area, and extrinsic causes, such as epigastric pressure from abnormal posture, are other agents helping to produce chronicity. The presence of hyperchlorhydria in conditions other than ulcer, and the absence of ulcer in true achylia gastrica, though occasionally lesions in the stomach may be present in the latter condition, are facts suggesting that hydrochloric acid is a secondary, though prominent, factor in effecting the beginning of an ulcer. It is not the main etiologic factor.

Various theories have been advanced explaining the cause of peptic ulcer. Of these, the hypothesis based on the endocrine origin of ulcer is most probable. It attributes the initial lesion primarily to a disturbance in internal glandular secretion, which causes a disturbed equilibrium in the vegetative nervous system, both vagus and sympathetic, and consequently, functional disturbances in the various organs supplied by these nerves. Eventually, the continued functional disorder produces pathologic lesions and clinical symptoms.

CAUSES OF INITIAL LESION

Briefly stated, the initial lesion is attributed to an interference with the blood supply in a limited area of the gastric or duodenal mucous membrane. The circulatory disturbance may be, first, an ischemia of that part of the mucous membrane involved as a result of a spastic contraction either of the small artery or of the musculature surrounding that artery, both instances causing the occlusion of the artery; or the circulatory disturbance may be, second, a stasis of the blood in the small artery, either through vasodilatation or through pull on the vessel wall by relaxation of the musculature surrounding that vessel. Be it stasis or spastic contraction, there is an interference with the blood supply and hence with nutrition. To this is attributed the origin of the initial lesion, and subsequently ulceration takes place.

Because of an irritation arising from disturbances of internal secretion, the terminal nerve fibers of the vagus may produce a spastic contraction of the muscularis mucosae in localized areas, causing an occlusion of the smallest arteries contained in those particular areas. This continued spastic contraction of the musculature gradually causes an ischemia of the area supplied by the blood vessel. This ischemia interferes with the nutrition and, with the aid of the corrosive action of the hydrochloric acid, ulceration results. The same is true for spastic contraction of the vessel wall itself. The initial lesion, however, need not necessarily arise from vasoconstriction. It may originate from dilatation of the vessel. Because of reduced stimulation of the splanchnic nerve or through pull on the vessel walls by relaxation of the surrounding musculature from the diminished vagus stimulation, stasis of the blood in the smallest arteries occurs with an interference to nutrition. The next step is ulceration. But the vegetative nervous system, vagus and sympathetic, is fundamentally the main etiologic factor, for it originally affects the blood vessels or muscles causing the constriction or dilatation, contraction or relaxation. The vegetative nervous system in turn is dominated by the glands of internal secretion.

What may be assumed possible for small areas of musculature is a well known fact for larger areas. Gastrospasm, pylorospasm, etc., or gastric atony exist without the presence of ulcer. The fact that peptic ulcer is associated frequently with hypertonic or spastic stomach does not permit the assumption that the hypertonicity or spasticity is due to the ulcer. Were this true, one would not find ulcer associated with the subtonic stomach. It is not unreasonable to suppose, however, that the ulcer, once developed, sustains the spasm. Disturbances in motility, therefore, occur independent of ulcer.

Gastric atony or gastric spasticity is attributed to gastric neurosis, due to a disturbed equilibrium in the gastric nerves. This may manifest itself independent of the ulcer, but the existence of the ulcer is impossible at least without the local neurosis. This gastric neurosis is due to a disturbance in one or more of the endocrine glands. The disturbance is purely a functional one and has been termed ductless gland neurosis. To recapitulate briefly, the initial lesion of ulcer is due to (1) the ductless gland neurosis; (2) the influence of this neurosis on the vegetative nerves, resulting in the (3) gastric neurosis with atony or spasticity; (4) the disturbed circulation, caused by (*a*) ischemia from vasoconstriction of the small arteries or from pressure by the spastic contraction of the muscularis mucosae, or (*b*) stasis from vasodilatation, or by pull of the musculature on the vessel wall; (5) subsequent ulceration; (6) etiologic factors in the production of chronicity.

ETIOLOGY

Ductless gland neurosis was first emphasized by Bauer[1] and later by Hemmeter,[2] who states that there are cases of exophthalmic goiter which were characterized by all the phenomena of that disease, but which were not relieved by thyroidectomy and in which parts of the removed thyroid were found to be normal. No hyperplasia of secreting vesicles, no liquefaction of colloid material and no small round cell infiltration were noted. Cases are reported in which the full clinical picture of exophthalmic goiter developed in women with a rather sudden onset due to mental excitement.

According to Canon,[3] violent emotion causes an output of epinephrin from the suprarenals. Such repeated functional disturbances in the suprarenals may lead eventually to cessation of gastro-intestinal movement, dilatation of the bronchi, increased blood pressure and glycosuria. All these phenomena may be produced experimentally by the intravenous injection of epinephrin.

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[1] Bauer, J.: Zur Functionsprufung des vegetation Nervensystems, Deutsch. Arch. f. klin. Med., 1912, **107**, 39.

[2] Hemmeter, J. C.: Hypertonicity and Hypotonicity of the Vagus and the Sympathetic Nervous System, New York Med. Jour., 1914, **99**, 101.

[3] Canon, W. B., and de la Paz, D.: Emotional Stimulation of Adrenal Secretion, Am. Jour. Physiol., 1911, **28**, 64.

So, too, exophthalmic goiter, at least at the very beginning, must be a functional disease. Likewise, glycosuria or mild diabetes may show the islands of Langerhans in the very early stages of the disease to be normal; or even achylia gastrica, which is probably at first a true neurosis, may be at the very start a functional disturbance, but later on may show a pathologic lesion, namely, atrophy of the glands.

Depressive states, on the contrary, may produce suppression of the thyroid secretion or suppression of the epinephrin secretion. It seems that in exophthalmic goiter not only excessive quantities of sympathetic and vagal products pass into the blood stream, but also epinephrin. This is proved from the researches of Leo Adler[4] and others who found in the blood serum of all patients suffering from exophthalmic goiter a high percentage of epinephrin. The symptoms and signs therefore in exophthalmic goiter will vary, depending on the excesses of the various chemicals entering into the blood stream from the thyroid.

The effect of the various secretory products of the thyroid on the gastro-intestinal tract is of vast importance. The thyroid has a double innervation, sympathetic and vagus. If the sympathetic products predominate, a condition which occurs in the majority of cases of exophthalmic goiter, anacidity or hypacidity will be found, since sympathetic products inhibit gastric secretions to a great extent. In instances in which the sympathetic and vagal products are discharged in equal quantities into the circulation, hyperchlorhydria may be found. The pure vagotonic type of exophthalmic goiter, although assumed by Eppinger and Hess,[5] is rare. However, in many cases of exophthalmic goiter the effect of vagal excitation is evident, namely, gastro-intestinal disturbances, vomiting and profuse diarrhea, all being manifestations of a thyrotoxicosis.

Crotti[6] states that the stomachs of patients with exophthalmic goiter in whom the gastro-intestinal symptoms are most pronounced, on repeated fluoroscopic examinations, show a state of more or less constant spasticity. There are, however, those patients with exophthalmic goiter who are obstinately constipated. In such persons few vagal signs are noted, and the constipation may be due to increased intestinal inhibition from the sympathetic excess. Furthermore, Iscovesco[7] has isolated from the thyroid a lipoid substance, injections of which into animals produced the typical picture of thyrotoxicosis. All these facts indicate that exophthalmic goiter is a mixed neurosis attributed to an overproduction of sympathetic and vagal products of the thyroid. Thus the sympathetic overflow manifests itself chiefly on the secretions of the stomach, and the vagal on the peristalsis. All grades of functional disturbances may occur from very severe to very mild. Again, there may be an overproduction of the sympathetic products or there may occur a disturbance in the thyroid gland in which the vagal products will be produced in larger quantities than the sympathetic, or both vagal and sympathetic may be manufactured in excessive amounts, as happens in cases of exophthalmic goiter with severe gastro-intestinal disturbances. Small quantities of vagal products, due to minor disturbances in the thyroid, may lead to marked alteration in the peristalsis and secretion of the stomach. Such a mild vagal neurosis may be the underlying cause of the gastric neurosis.

Suprarenal insufficiency, however, may influence the peristalsis and secretion in the same manner as occurs in vagal thyroid neurosis, for the sympathetic impulses are diminished, and, as has been discussed elsewhere, suprarenal deficiencies mean various grades of vagotonia. There are no reports of fluoroscopic findings in Addison's disease, but in two cases, the gastric analysis showed hyperchlorhydria, and in addition, blood examination showed an eosinophilia, both findings being common in vagotonia.

The sluggish digestion and atony of the stomach and the bowels in myxedematous patients are quite characteristic. Anacidity and hypochlorhydria is the rule in this condition. The cause of the diminished secretion is slightly different from that observed in exophthalmic goiter, since in the latter it is caused by sympathetic inhibition, while in the former by diminished vagal excitation.

The decreased peristalsis of the gastro-intestinal tract in a myxedematous patient is attributed to an absence of the vagal products of the thyroid in the blood stream, as a result of depressive causes leading to the vagal neurosis in that gland. Lane,[8] for instance, believes that intestinal stasis is due to subthyroidism. Since epinephrin inhibits intestinal and gastric peristalsis, a condition similar to the peristalsis observed in myxedema should be expected in hyperfunction of the suprarenals or in the suprarenal neurosis of suprarenalemia.

Parathyroid insufficiency seems to lead to spasticity of the stomach. In two cases of ulcer with tetany, Bine[9] reported the presence of pylorospasm. Thus, parathyroid hyperfunction must have an inhibitory effect on peristalsis.

The pituitary body, the action of whose products are on the extended vagus or pelvic nerves, may be excluded from consideration in regard to gastric peristalsis, and, hence probably plays no rôle in the origin of the initial lesion of ulcer.

Hypersecretion or hyposecretion are secretory disturbances found in gastric neurosis and peptic ulcers. The secretion of the duodenal mucosa shows its effect on pancreatic and intestinal secretion through the blood stream, and Edkins gastrin, or as Starling calls it, "gastric secretin," shows its effect through the same route on gastric secretions. The secretins are endocrine products of the gastric and duodenal mucosa. Gastrin belongs to the same class of hormones as the duodenal secretion, which, according to Fürth and Schwarz,[10] is a mixture of several substances possessing the properties of exciting secretion, of which the most important is cholin. Cholin is essentially a vagotrope substance, which in excess may excite the secretory vagus fibers, and in deficient quantities may cause suppression of gastric secretion.

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[4] Adler, Leo.: Untersuchungen uber den Adrenalingehalt des Blutes, Deutsch. Arch. f. klin. Med., 1914, **114**, 283.

[5] Eppinger and Hess: Die Vagotonie, Berlin, Hirschwald, 1910.

[6] Crotti, André: Thyroid and Thymus, Philadelphia, Lea and Febiger, 1918.

[7] Iscovesco, quoted by Crotti: Thyroid and Thymus, p. 51.

[8] Lane, quoted by McGarrison: The Thyroid Gland in Health and Disease, William Wood and Co., New York, 1917, p. 188.

[9] Bine, René: Duodenal Ulcer and Tetany, The Journal A. M. A., May 5, 1917, p. 1315.

[10] Fürth and Schwarz, quoted by Biedl, Arthur: The Internal Secretory Organs, English translation by Linda Forster, New York, William Wood & Co., 1913, p. 439.

Although these products, or, as Starling calls them, chemical messengers, act directly on the glands through the blood stream, they may also influence the secretory fibers of the vegetative nerves. Since the true ductless glands exert their influence on the vegetative nerves, the influence of these glands directly on the secretions of the stomach and the bowels is probable.

One must not, however, deny the influence of the central nervous system on the gastric secretion. This is evident from the effect of the sight, smell, and taste of food on the secretion of gastric juice. Through the epoch-making works of Starling, Pawlow, Canon[11] and others, it became a known fact that the maintenance of the body is to a large extent independent of the central nervous system.

Through the plexuses of Meissner and Auerbach, acting conjointly with the sympathetic ganglions, the central nervous system has apparently a minor influence on the gastro-intestinal tract, but the processes of digestion are still controlled by hormones. In regard to the gastro-intestinal peristalsis, however, the central nervous system, together with a reflex mechanism, must be considered. Thus, for instance, the acid secretion which is elaborated in the gastric mucosa, causes the pyloric sphincter to relax at regular intervals; and also, as another example, the movement of the intestines is provoked by the bowel contents. It is not unreasonable to assume that there is also a nervous reflex, which is set in motion by the secretion of the gastric and intestinal mucosa to control peristalsis. Still, one must admit that the movements of the stomach and bowels are chiefly regulated by the chemical communication from one part of the intestine to another or through the agency of products from the endocrine glands circulating in the blood stream and acting directly on the nerves or musculature.

Altered function in the endocrine glands, therefore, will lead to altered peristalsis. This possible dependence of the disturbed peristalsis on the products of internal secretions was suspected by William Mayo,[12] in a paper of 1907, in which he said: "The curious blending of the sympathetic with the ductless glands is exemplified in the suprarenals, thyroids and parathyroids. Here we may possibly get an explanation of that close association which exists between pyloric spasm, atonic dilatation, prolapse of the stomach and gastric neurosis."

The excesses or the deficiencies of products of the endocrine glands, producing manifestations of the ductless gland neurosis, passing through the blood stream, act directly on the muscle, causing pylorospasm, gastrospasm, hour-glass stomach or cardiospasm—various grades of atony. These excesses or deficiencies may also show their effects on minute limited areas of the muscularis mucosae or the mediums of the vessels producing the ischemia or stasis, either of these conditions leading to circulatory interference and altered nutrition. From these localized areas of ischemia or stasis, lesions occasionally form probably in the entire intestinal tract, as well as in the stomach and duodenum, but, on account of the absence of the hydrochloric acid, ulceration does not occur, at least with the characteristics of ulcus rotundum. These latter lesions may become the site of bacterial invasions, as in the appendix, for instance. The bacteria may become pathogenic and lead to a true appendicitis. Aschoff[13] and others do not believe in the bacteriologic origin of appendicitis, and, also, according to Hertogne,[14] appendicitis is due to thyroid insufficiency. Further, the frequent association of peptic ulcer, gastric or duodenal, with appendicitis, suggests that appendicitis is due also to an endocrinous origin.

That a neurosis precedes the ulcer is evident from reliable statistical data. Many authorities have compiled statistics and reports of cases in which neurosis preceded the ulcer. Cackovic[15] carefully analyzed histories of 172 cases of operatively demonstrated ulcer. In 18.5 per cent. of the patients, the initial symptoms appeared between the ages of 10 and 19 years; in 32 per cent., between the ages of 20 and 29 years; in 29 per cent., between the ages of 30 and 39 years, and in 18 per cent., after 40 years. The initial symptoms of ulcer are found in the third decade of life, at a time when neurosis is most frequent, but the operative evidence of the presence of an ulcer, however, is for obvious reasons obtained late in life.

Clinical observations prove that many patients afflicted with peptic ulcer present vegetative stigmata as evidence of the general neurosis. Peptic ulcer patients often respond to the pilocarpin test positively, or to the epinephrin test, or to both. Westphal and Katsch,[16] who have made an extensive study of the vegetative stigmata and who have completely enumerated all of them, found these stigmata to be absent only in the middle-aged; and these do not respond to either of the drugs. But signs of a disturbed equilibrium of the stomach, the signs of local gastric neurosis, are common in ulcer patients in all ages. They are hypermotility or spasticity, hypomotility or various grades of atony, and hyperchlorhydria, rarely hypochlorhydria, hypersecretion or hyposecretion. The hypertonic type of stomach and hyperchlorhydria are more often observed than the atonic type and hypochlorhydria.

Symptoms and signs of vagotonia or sympathicotonia or both, pointing to a general or local neurosis, are seen in the patients during the whole course of the disease and frequently persist after the patient has been considered medically or surgically cured. In a recently published paper,[17] it is shown why great value should not be placed on surgical, as well as medical, statistics concerning ulcer cures. The gastric neurosis ceases when the ductless gland neurosis has ceased, and this may often be accomplished by nature, assisted by medical or surgical procedures.

A ductless gland neurosis may, in the course of time, lead to actual pathologic changes within the gland itself, as happens to the islands of Langerhans from slight changes to their complete atrophy as in severe cases of diabetes, or as in the well known changes in exophthalmic goiter. This may explain the pathologic changes in the ductless gland found in patients afflicted with ulcer. The pathologist Cesaris Demel,[18] who investigated at necropsies the suprarenals in ulcer cases, found marked gross changes in the five examined.

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[11] Starling, Pawlow and Canon; quoted by W. J. Mayo (Footnote 12).

[12] Mayo, W. J.: The Contributions of Surgery to a Better Understanding of Gastric and Duodenal Ulcer, Tr. Cong. Am. Phys. and Surg., 1907, 7, 108.

[13] Aschoff, L.: Pathologische Anatomie, Ed. 3, Jena, Gustav Fischer, 1913, 2, 793.

[14] Hertogne, quoted by McGarrison (Footnote 8), p. 188.

[15] Von Cackovic, M.: Ueber das Ulcus ventriculi im Kindesalter und seine Folgen, Arch. f. klin. Chir., August, 1912.

[16] Westphal and Katsch: Das neurotische Ulcus duodeni, Mitt. a. d. Grenzgeb. d. Med. u. Chir., 1913, 26. Gustav Fischer, 1913.

[17] Friedman, G. A.: Should Chronic Peptic Ulcer be Treated Medically or Surgically? Am. Med., 1918, 13, 109.

Finzi,[19] in quoting him, suggests that in all necropsies of ulcer cases, the suprarenals should receive due investigation. Changes should also be looked for and noted in the thyroid.

RESULTS OF ANIMAL EXPERIMENTATION

The results of animal experimentation are also suggestive as to the probable endocrine origin of peptic ulcer. The acute ulcers in animals, produced in former experiments, heal rapidly. Panum and Conheim,[20] for instance, found ulcers with all their characteristics after injecting lead chromate into one of the gastric vessels arising from the splenic artery. Such animals, killed within a few days after the experiments, showed the typical acute ulcers, but all animals killed after the second week had a normal mucous membrane. The experimental ulcers heal because the constitutions of animals cannot be changed by experimentation.

Vagotonia, sympathicotonia, or a combination of both, are, according to Eppinger and Hess, constitutional anomalies. Experiments have been performed to alter the constitution in the animals, to imitate in a rather rough manner vagotonia and sympathicotonia in man. Lesions, erosions, or acute ulcers were produced by experimentally causing hyperfunction through injections of products of internal secretions, or by causing deficiencies in some of the ductless glands by partial or complete removal of the glands.

Acute ulcers in the stomach or duodenum, or in both, were obtained after complete or partial removal of the suprarenals by Finzi and myself[21] in dogs and rabbits, by Elliot,[22] in cats, and by Mann[23] in dogs. After partial parathyroidectomy, Carlson and Jacobson[24] observed acute ulcers in the stomach and duodenum of dogs, and I observed them in dogs and rabbits. After repeated injections of desiccated thyroid extract, gastric ulcers were noted in dogs and rabbits, and after repeated epinephrin injections, lesions or acute duodenal ulcers were observed in dogs and, occasionally, in rabbits. Peptic ulcers were obtained by Westphal[25] after pilocarpin injections in rabbits, dogs and cats. I found gastric ulcers after such injections in rabbits, and gastric and duodenal ulcers or lesions, after injecting into rabbits, pilocarpin and epinephrin alternately.

Pilocarpin closely resembles thyroid extract in its action. Injections of thyroid extract in animals lead to profuse diarrhea, similar to the action of pilocarpin injections. The effect of pilocarpin is greatly reduced in thyroidectomized animals. By feeding animals or man with thyroid extract, one obtains results which resemble greatly the pharmacologic action on the administration of pilocarpin: diarrhea, perspiration, respiratory disturbances, lymphocytosis and eosinophilia. The cells of the thyroid, according to Wyss and Schafer,[26] react to pilocarpin in the same way as the cells of the true secretory glands.

In all the experiments, the lesions or ulcers obtained were often single. In none of the animals were there the characteristics of chronic ulcer noted in man, but the tendency against healing was often evident. This was especially noted in our[27] animals in which an ulcer was found several months after the parathyroidectomy was performed. Finzi also emphasizes this lack of healing power after partial suprarenalectomy. That the ulcers obtained in all the animals were really due to an intentional disturbance in the glands, is clear from the fact that in rabbits in which epinephrin was injected or suprarenals implanted (Finzi), after removal of the suprarenals, the mucous membrane of the stomach was found to be intact, the same as the mucosa of the animals used as controls.

As the main purpose of all the experiments in which the endocrine glands were removed or the products of these glands injected was to imitate the constitutional anomalies found in man, such experiments, I believe, are of greater value than those hitherto described. These experiments are especially of great interest and benefit because they demonstrate the possible relation of the lesions or ulcers to a disturbed motility.

The animals, which received repeated injections of thyroid extract for several weeks, suffered from diarrhea, practically after the second injection, and similarly profuse diarrhea was a conspicuous feature in those injected with pilocarpin. The dogs, however, were obstinately constipated on repeated epinephrin injections, during the period of the injections. Constipation was not a prominent feature in rabbits which were injected alternately with pilocarpin and epinephrin. In the rabbits injected with pilocarpin alone, in which a necropsy was done soon after the last injection, the stomach frequently presented the various stages of spasticity, that is, pylorospasm, gastrospasm, hour-glass stomach and even cardiospasm. In the animal at necropsy several months after the thyroidectomy, the stomach was often markedly dilated without the presence of any obstruction. The stomach resembled greatly the atonic stomach observed under the fluoroscopic screen in ulcer cases. On histologic examination, sections of the stomach showed fatty infiltration or fatty degeneration in the gastric musculature, especially near or at the pylorus.

One must assume that this infiltration is similar to that observed in the musculature of the tongue and skin in myxedematous patients. Pilocarpin produces irritative conditions in the vagus, resulting in spastic stomach and in increased intestinal peristalsis, and also contracts, according to Pal,[28] the mesenteric vessels. Injections of thyroid extract must have a similar effect, namely, diarrhea and spastic contraction of the stomach. The spastic stomach is also observed clinically by fluoroscopy in exophthalmic goiter cases with severe gastro-intestinal disturbances. Irritative states in the

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18. Demel, Cesaris, quoted by Finzi (Footnote 19).
19. Finzi, Otello: Ueber die Veränderungen der Magenschleimhaut bei Tieren nach Nebennierenextirpation und über experimentelle erzeugte Magengeschwüre, Virchows Arch. f. path. Anat., 1913, **214**, 413.
20. Panum and Conheim, quoted by Suzuki: Ueber experimentelle Erzeugung des Magengerschwuere, Arch. f. klin. Chir., 1912, **98**, 632.
21. Friedman, G. A.: The Influence of Removal of the Adrenals and One-Sided Thyroidectomy upon the Gastric and Duodenal Mucosa; the Experimental Production of Lesions, Erosions or Acute Ulcers, Jour. Med. Research, 1915, **32**, 287.
22. Elliot, T. R.: Some Results of Excision of the Adrenal Glands, Am. Jour. Physiol., 1915, **49**, 38.
23. Mann, Frank K. C.: A Study of Gastric Ulcers Following the Removal of the Adrenals, Jour. Exper. Med., 1916, **23**, 203.
24. Carlson, A. J., and Jacobson, Clara: Further Studies on the Nature of Parathyroid Tetany, Am. Jour. Physiol., 1911, **28**, 133.
25. Westphal, Karl: Untersuchungen zur Frage der nervösen Entstehung peptischer Ulcers, Deutsch Arch. f. klin. Med., 1914, **114**, 327.
26. Wyss and Schafer, quoted from Biedl (Footnote 10), p. 28.
27. Friedman, G. A.: Jour. Med. Research, 1918, **38**, 69.
28. Pal, quoted from Biedl (Footnote 10), p. 200.

vagus must exist, as it was explained, in the animals, after partial or complete suprarenalectomy, or after parathyroidectomy, for peptic ulcer cases with tetany and pylorospasm have been observed. Thyroid deficiencies, caused by thyroidectomy, produce hypotonic conditions due to diminished vagal stimulation. Epinephrin injections, as in experimental suprarenalemia, produce hypotonic conditions, due to increased inhibition of the splanchnic nerves.

Therefore, the hypertonic stomach, or the subtonic stomach, in which the presence of an ulcer may be demonstrated, is attributed primarily to a disturbance in the thyroid or in the suprarenals. If the effect is on minute localized areas of the organ, ischemia or stasis, as explained, results. The initial lesion of ulcer gradually develops and through the secondary factors mentioned, the typical ulcer is produced.

CONCLUSIONS

1. The initial lesion of the peptic ulcer is due to vascular changes, such as ischemia or stasis, attributed to contraction or dilatation of limited areas of musculature either of the vessel itself or of the muscularis mucosae surrounding that vessel.
2. The spastic or subtonic stomach of gastric neurosis may lead to these vascular changes. The spastic stomach is caused by deficiencies in parathyroid or epinephrin secretions, or, by excesses of one or more of the thyroid products. The subtonic stomach is due to deficiencies in thyroid products or to excesses in parathyroid or epinephrin secretion.
3. The altered peristalsis in peptic ulcer is produced chiefly by glandular neurosis, either in thyroid suprarenals or parathyroids.
4. The ductless gland neurosis causes secretory disturbances either directly or indirectly, by centering its influence on the pyloric or duodenal mucosae, endowed with endocrine properties.
5. The functional disturbances in the true endocrine glands may, in the course of time, lead to actual pathologic changes in themselves.
6. Acute experimental ulcer after partial parathyroidectomy of partial suprarenalectomy does not show a tendency to heal.
7. The spastic stomach may frequently be produced experimentally by injections of pilocarpin, whose pharmacologic action is similar to that of thyroid extract.
8. Atonic dilatation is observed after partial thyroidectomy.
9. Hydrochloric acid is an important factor in the further development of the acute ulcer from the initial lesion.
10. Clinical observations in conjunction with experimental findings suggest the endocrine origin of the initial lesion of peptic ulcer.

ABSTRACT OF DISCUSSION

Dr. Frank C. Mann, Rochester, Minn.: There is no doubt that the chronic ulcer must have an acute beginning. It is a different question, however, whether or not acute ulcers, from all causes, or from only one or two particular causes, develop into the chronic ulcer as it is seen in man. The relationship of the ductless glands to the production of ulcer is certainly closely associated with the relationship of the nervous system to the production of this lesion. Acute ulcers are quite easily produced by a score or more of methods. My work is in entire accord with the experimental work of Dr. Friedman. It is a different problem, however, to produce the chronic indurated type of ulcer. In a series of about 200 experiments, in which I removed only one suprarenal, only one chronic ulcer was produced. Extirpation of both suprarenals probably produces ulcer in 95 per cent. of the cases. The part a toxic condition plays in the production of chronic ulcer is not clear. I have received communications from a large number of laboratories, both in this country and abroad, stating that in their work in Pasteur institutes, or in studies of diphtheria toxin, they found that the injection of the toxin produced a double lesion, one in the suprarenals, and one of the mucosa of the stomach (the acute ulcer), and they felt that there was a relationship between the two. I believe it would be very difficult to tell whether the two were dependent on each other, or both dependent on the toxic condition. I am inclined to believe that if we have any severe toxic state, we have the elements for the formation of acute ulcer, and that a chronic ulcer will develop on any of these.

In a small series of cases of Addison's diseases in which I witnessed the necropsy, I have found only one case in which there was a chronic ulcer. In this case there also were a small number of acute ulcers. Certainly, in the formation of these acute ulcers we have two things: first, something in regard to the relationship of the anatomic mechanism of the gastric mucosa and its adjacent muscularis, together with some toxic factor which changes the condition of the cell, and the digestion of the gastric juice. For instance, in these ulcers which follow conditions like double suprarenalectomy, you will not get ulcers if a portion of the lower intestine is implanted into the stomach; in other words, the mucosa of the implanted jejunum will remain normal, although ulcers may occur around the stomach, showing that there is some definite condition in the mechanism of the mucosa of the stomach. And the same fact is true of the upper portion of the duodenum.

Dr. V. A. Lapenta, Indianapolis: We have too great a tendency to crystallize our views of these chronic lesions to infections solely. I believe that it can be stated by all men who have had more or less experience with these lesions, that such patients unmistakably exhibit either a type of vagotonia or sympathicotonia, I have never seen a patient with either acute or chronic ulcer, and especially chronic ulcer, who was not either a vagotonic or sympathicotonic individual. I do not believe that Dr. Rosenow's work disputes Dr. Friedman's findings. In fact, his work in the production of gastric and duodenal ulcer, with special strains of streptococci, by him isolated, is rather corroborative, because in the intravenous injection or parenteral injection of such toxins and proteins, with their peculiar atomic structures, there is caused a disturbance of the suprarenal system, with resultant sympathicotonia or vagotonia. This is the first step in the suprarenalogic reaction in the molecular processes. The bacteria find in the devitalized piece of gastric mucosa a most suitable place to localize, and ulcer is produced. Dr. Rosenow's work really brings experimental evidence to Dr. Friedman's contention. We must bear in mind another thing: Peptic ulcer is a disease of civilization. You never saw peptic ulcer in imbeciles; it is mostly a disease of very nervous individuals; it is a disease of civilization.

This seems to emphasize the question of the energy intake and the energy output, and the rôle played in the equilibrium by the suprarenal system. In the modern conception the high kinetic drive, the insult to the vasomotor balance that is brought about by these nervous emotions will in the course of time, naturally not months or days, lead to localized angioneurosis, which when present in the gastric mucosa, may result in peptic ulcer.

Several years ago it was pointed out that once an area of decreased resistance is formed in the stomach, gastric juice corrosion will do the rest, and if there are foci of infection, then you have a true cycle, and you are going to have an ulcer, and in nine cases out of ten that ulcer will become chronic. I believe that Dr. Friedman showed very active round cell infiltration in his specimens. This is very suggestive of the final result.

Dr. Bertram W. Sippy, Chicago: For half a century it has been generally recognized that ulcer of the stomach or duodenum develops in approximately the following manner: A small, circumscribed or local area in the mucous membrane of the stomach or duodenum for some reason loses its normal resistance to the peptic action of the juices and becomes digested. This resistance to the normal condition of the peptic action of the gastric juice was first supposed to have been brought about by malnutrition or necrosis. In 1855 Malnckow pointed out that it was a vascular condition of some kind that had to do with the interference of the normal resistance, this corrosive action of the gastric juice. From that time on a large amount of experimental work has been done. Injection of lead salts has tended to prove that if you interfere with the nutrition of the mucosa of the stomach or duodenum a peptic ulcer will result. A large number of means have been used to produce the peptic ulcer, or the ulcer in the stomach or duodenum, but all of them, so far as we can make out, have to do either with spasm or the introduction of some toxic substance, of bacteria, of a ligature or something that interferes with the nutrition of the mucosa. The arteries of the stomach are end arteries entirely; that is, they have very few anastomoses. These experimental ulcers, produced in that way, heal rapidly, relatively speaking. The reason was thought to be, and probably is, that a raw spot is not an ulcer. There is a difference between these experimental ulcers and the clinical ulcers. This experimental ulcer destroys the mucosa. The base of this ulcer may have nothing in it to cause it to lose its normal resistance to the peptic action of the gastric juice, and under such conditions that raw spot will heal just as well in the presence of hydrochloric acid and pepsin as it would if there were no hydrochloric acid and pepsin there. Nothing interferes with the blood supply to that part. In these chronic ulcers, those that do not get well, it is assumed that the tissue had lost its resistance to the peptic action of the gastric juice, and therefore the hydrochloric acid and pepsin would keep it from healing. It is possible that the bacteria in the walls of this ulcer have something to do with lessening the resistance of the tissue to the peptic action of the gastric juices. Corrosion of the gastric juice is the most important factor.

Dr. Martin E. Rehfuss, Philadelphia: About ten years ago Dr. Leo Loeb and I were engaged in the study of the experimental production of gastric ulcer. We found that we could administer to animals the venom of *Heloderma suspectum*, a form of venomous lizard obtained in New Mexico, and in that way produce an acute ulcer. We injected alkali into the stomach of these animals and found that this alkali reduced the possibility to ulcer formation. We gave the animals herudin. In several instances the animals bled to death in their own stomachs. We then tried other substances, or caused acute toxemia in the animal, tried pilocarpin and atropin, which are supposed to act on the vagotonic system. We tried the effect of hydrochloric acid, phenol, copper sulphate and bacterial toxins. We found that every variety of substance produced an acute ulcer lesion of the stomach; it was something of a hemorrhagic lesion.

I saw some of the animals that Dr. Rosenow used in his experiments, and the lesions which he showed at that time were just the same sort as we succeeded in producing with various toxic substances. Shortly after that I went to Paris to the Pasteur Institute. I collected the stomachs of a very large number of laboratory animals dead of various bacterial infections. It is possible to produce a form of ulceration with almost every toxic substance if you can get the animal in a sufficiently high state of toxicity. In other words, it is my belief, from the experiments we performed, that there is a form of ulcer which is not specific. Whether or not these ulcers become chronic, whether they resemble the chronic ulcer seen in man, I am not prepared to state; but one thing is certain, an acute ulcer, an acute corrosion, can be produced in a great variety of ways. If that be the case, what is the theory we should adopt? The experiments of Rosenow are most convincing. I have adopted the plan in all cases of ulcer treatment to administer at the same time an autogenous vaccine prepared from local foci in the nose, throat, teeth, etc. What that has done I do not know. I have not yet collected the statistics. In almost every instance it is possible to extract a form of streptococcus from the nose, teeth or throat; and in quite a few instances I have given the stock vaccines and the combined colon bacillus.

Bolton produced localized erosions and ulcer with gastrotoxic serums, and our photographs record that our ulcers are the same, or the areas, the small ulcers, the same as he has shown in his book.

Dr. G. A. Friedman, New York: I was misunderstood by the majority of those who took part in the discussion. My object was not solely to demonstrate experimental ulcers. We know that ulcers may be produced experimentally by various means. I explained in my paper that a condition such as ductless gland neurosis is possible, and that the latter causes the gastric neurosis which leads to spasticity or atony of the stomach. This spasticity or atony may show its effect on small gastric vessels, and in this way the initial lesion of ulcer may take place. I do not know the cause of chronic ulcer. I should first like to know the cause of acute ulcer. My object was to study the latter from a new view point, and it seems that the explanation given here brings the clinical work in close association with the experimental work, which connecting link was, I believe, overlooked by the gentlemen, except Dr. Lapenta.

I have never found chronic ulcer in any of my experiments, but I have observed ulcers without the tendency to heal in animals after parathyroidectomy. The ulcers were frequently found several months after the operations were performed. Similar observations regarding the failure to heal after parathyroidectomy were made by Finzi, an Italian investigator. Since acute ulcers produced by other means heal rapidly, the absence of healing power in the aforesaid experiments prove that constitutional anomalies can be imitated roughly in animals, and that the constitutional changes in man afflicted with ulcer prevent the ulcers from healing. From my experience with infectious diseases and oral sepsis in Russia I have not gained the impression that ulcer is commonly caused by infection. The infectious theory explains only one phase of the ulcer, while the explanation outlined here today covers several phases. Naturally the material which I have presented is not yet complete. I have presented this paper simply to stimulate others to continue this work.

Health Organization and Administration in Rural Districts. —If I were asked the question: "What one step would be of the most importance in the final creation of an adequate public health organization and administration in rural districts?" I should say—the creation of a public health consciousness in rural districts through the education of country boys and girls. If I had my way, I would take Professor Sedgwick from the faculty of the Massachusetts Agricultural College at Amherst and require him to teach public health and biology as a regularly prescribed course; and I would make it sufficiently attractive for Dr. Rosenau to resign his position at the Harvard Medical School and accept a like position on the agricultural school faculty at the University of Maine. In other words, I would appoint on all the agricultural school faculties throughout the United States first-class experts and teachers to teach the subjects of preventive medicine and public health as required courses, and to supervise extension work in these subjects. I would expect the agricultural school boy who is to return to the country life to learn as much about the human body and its diseases, and the methods of public sanitation, as he or she learns about the care and breeding of hogs, the raising of corn and wheat, and the scientific fertilization of the soil. These leaders would return to their respective home communities and plant the necessary seeds which would result in a ripe harvest of public health opinion and adequate organization and administration in rural districts. Furthermore, matters pertaining to personal and public health should be taught to the rural population in general through the agency of the extension divisions of our universities. It is high time for less discussion in Boston and other cities of rural health administration, and for more discussion in Podunk and other country communities of rural health problems and administration!—L. D. Bristol, State Health Commissioner of Maine, *Bulletin*, State Department of Health, August, 1918.

MICROSCOPIC STUDIES OF DISEASED PERIDENTAL TISSUES *

EDWARD H. HATTON, M.D.
CHICAGO

Most of the material on which these studies are based came from the peridental membrane clinic at the Northwestern University Dental School. In all of these, therefore, there are alterations of a high degree. At the same time, there are portions of each fragment that are only moderately changed. Zenker's fluid was used most often for fixation, and either celloidin or paraffin used for embedding. Paraffin was finally selected as the routine procedure because it was possible to get thinner sections and serial sections were more readily obtained. Hematoxylin and eosin, or methylene blue and eosin were the chief stains used. Occasionally methylene blue was used alone. The serial section procedure has more than paid for the trouble it entails, as it is only in this manner that the changes can be followed straight through the block, and reconstructions of the various parts achieved. An especially good illustration of this is in the transitions that take place in the epithelial layers.

These studies were begun as a routine procedure on all pieces of the gingivae removed to give deep pockets in the subgingival space a better chance to be obliterated, with the idea of seeing just how much destruction of the essential structures had taken place. The studies are confined to a rather superficial portion of the soft tissues investing the teeth, and no pretense is made at this time to present them in any definite relationship to etiologic factors, or to suggest a classification. There seems to be a very definite and constant picture presented in each specimen, only the details varying either as to extent, or as to the circumstances of their origin, which are apparently the result of etiologic factors.

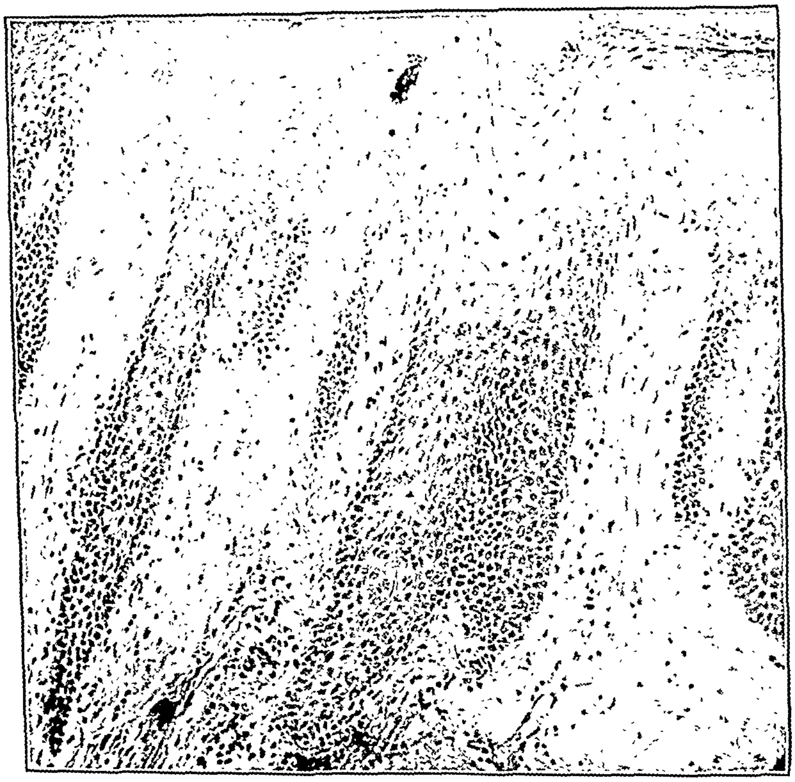

Fig. 1.—Elongated epithelial projections into the underlying tissues with accompanying round cell infiltration.

ALTERATIONS IN THE EPITHELIUM

Of all the changes, none are more picturesque than those occurring in the epithelial layers clothing the gingivae of these specimens. With one exception, they are probably not of vital importance, but they deserve description for two reasons, first, because they are part of the picture, and second, because there is a strong possibility of their being confused with other conditions.

An early alteration is the tendency of the epithelial projections into the subepithelial layers to extend themselves and so exaggerate the length of the papillae. A close examination of these projections will always reveal regions of infiltration along the basement membrane in the adjacent tissues, usually of the small round cell or lymphocyte type. These projections are slender, and as the condition advances, they twist and turn so that sections cut at any angle always have rounded, oval, or cylindrical masses of epithelium which seem unattached to any of the surface epithelium. By studying these in serial sections, we find it always possible to join them to projecting epithelial pegs. Such deformities of the epithelium are frequently found on the surfaces lying outside of the subgingival space, but they are rarely of any greater extent. It is a chronic or low grade inflammatory process.

But the epithelium, which lines the so-called pus pockets and which formerly was adjacent to the teeth, is always the site of other very noteworthy alterations. As this trough widens and deepens there is a tendency for the epithelium to project itself farther into the subepithelial tissues, and the forms of these projections become progressively more and more chaotic, the deeper they lie in the pocket. At the bottom, the surface continuity is no longer maintained in every case, but there are still masses of epithelial cells at the very bottom of every pocket examined thus far. These cords and projections are the seat of retrograde, disintegrating changes that begin at their centers. It is assumed that the older epithelial cells are less resistant to the destructive agents than are the new cells. Fragmentation of their nuclei, necrosis, infiltration with polymorphonuclear leukocytes, and other inflammatory cells all take place in a regular sequence, so that as an end-result the cylindric, ovoid, or spherical bodies become thin shells whose walls are composed of very new epithelial cells, and whose contents are more or less purulent fluid or semisolid material.

From the character of the epithelial cells, that is, their age, and their rapid destruction, these regions must be very unstable. The cells are small, with small nuclei which take the blue nuclear stains very deeply. They resemble the cells ordinarily found in the base-

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* Read before the Section on Stomatology at the Sixty-Ninth Annual Session of the American Medical Association, Chicago, June, 1918.

ment membrane. It is easy to assume that these epithelial cells exhibit a negative chemotaxis to the products of this process in the gingival trough, and that they push down into the subepithelial layers stressed by this force. Small blood vessels are found in these regions in great numbers. They are frequently packed with polymorphonuclear leukocytes, and nearly always contain one or several of these cells. Red cells are often found in considerable numbers outside the blood vessels, even to the extent of small hemorrhages. These may be the result of surgical trauma. The cells are often separated as though by fluid. Possibly this is caused by an edema or it may be simply an artefact. All these products are being constantly extended into the subgingival space, which, as a result, becomes a pus pocket. To one not familiar with this type of inflammatory tissue, some of these malformations are strongly suggestive of malignancy. There is apparently no relation at all between the two conditions.

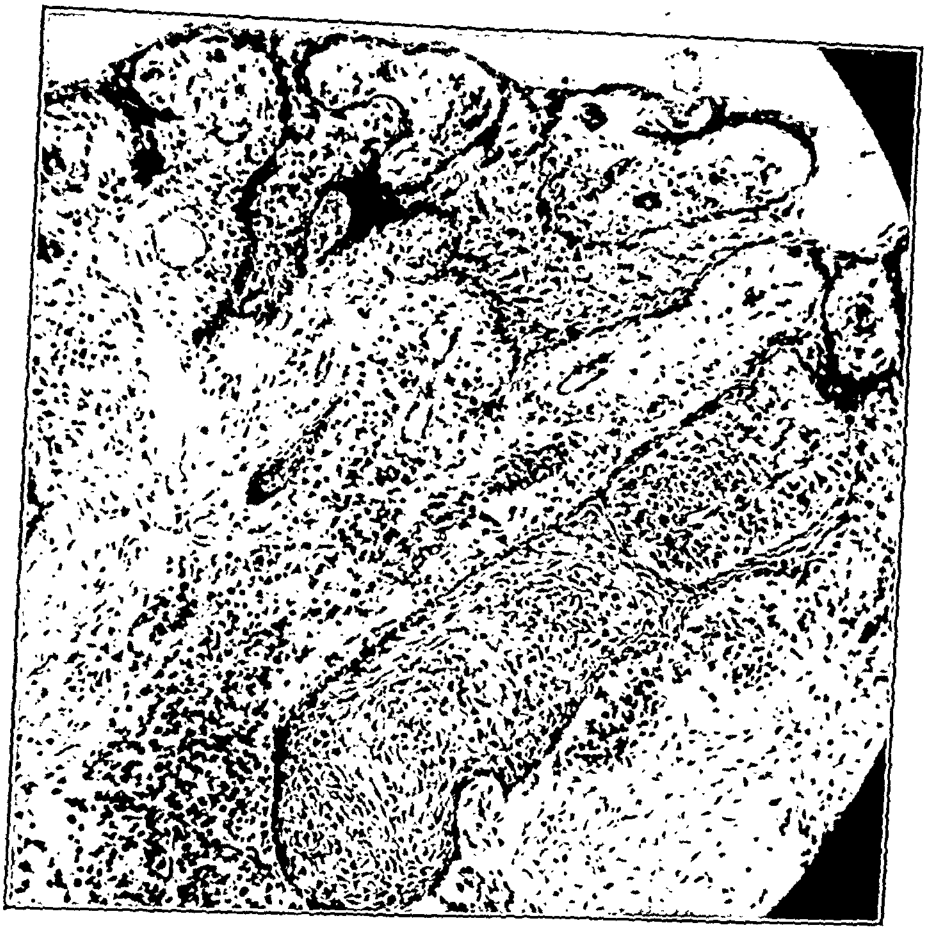

Fig. 2.—Epithelial deformities of the mucous membrane lying within the lining of the pus pocket.

INFILTRATIONS

The subepithelial regions as far as studied are characterized by inflammatory infiltrations which are invariably perivascular. Their distribution is most conveniently seen in buccolingual sections parallel to the long axis of the teeth. If the capillaries that supply the papillae just beneath the deformed and distorted epithelium are traced down into the deeper layers and their course followed even into the larger branches, just these and no others are the site of these infiltrations. In some sections, this border between healthy and infiltrated regions is most abrupt.

The infiltrating cells are most often of the small round cell type. There are large numbers of cells called plasma cells, with deeply stained cytoplasm and eccentrically placed nuclei. Occasional eosinophil cells are found, and polymorphonuclear leukocytes are not uncommon, especially in parts adjacent to degenerated epithelial projections. Unattached endothelial cells are frequently seen.

The vascular supply is very rich. The walls of the small veins and capillaries are often thickened, and many of these vessels are filled with polymorphonuclear leukocytes to the exclusion of the red cells.

The fibers of the gingivae and of the peridental membrane seem to be very susceptible to the destructive action of these forces. One of the first tendencies is for the fibers to lose their affinity for the stains, and either stain more faintly or react with the nuclear stains. Little by little, the fibers are replaced by the inflammatory infiltration. There are regions about the size of these epithelial ovoids which no longer have any cellular structure, and are occupied by a homogeneous staining substance. This seems to be some product of degeneration, either of dead epithelial cells or from some other necrotic process.

If a buccolingual section is carefully studied as to its form and the relations of its various parts, it will be found that a large portion of the free gingiva has disappeared. There is nearly always a mass of necrotic material lying on the epithelium at this point or just within the inner lip of the pocket. If the surface of the adjacent tooth is approximated, and the curve of the outer surface of the gingiva projected until it intersects with the buccal surface of its tooth, the amount of destruction may be very accurately estimated. There is a very marked tendency of the new crest to lie near a straight line drawn from the bottom of the pocket or the subgingival space to the nearest unaltered epithelium. If a line is drawn from the last point parallel to the distribution of the ascending capillaries down to the alveolar process, this line will mark the division between the healthy peridental membrane and the region in which there is inflammatory infiltration and destruction of the fibers of it. In the latter region, the infiltration is usually so marked as to assure the nearly complete destruction of the fibers, and in these advanced cases which are here described, there is no tendency to any reconstruction of them. As far as these tissues are concerned, when once the fibers are destroyed, they do not seem to be regenerated.

BACTERIA IN THE TISSUES

Bacteria have been demonstrated in various tissues by the newer methods of bacteriology, as well as by the more standard staining processes. Tubercle bacilli are often found in the tissues, as well as typhoid, plague, and the spirochete of syphilis in the lesions which they respectively produce.

More recently cocci have been demonstrated in the tissues during the course of various diseases, such as poliomyelitis and experimental scurvy. Curtis[1] found cocci in uteri removed for various causes, and Rosenow[2] has described an infected root apex about which there was a small region of granulation tissue, in which he was able to demonstrate a latent group of bacteria, which were stimulated to growth by incubation in bouillon for ten hours. Then the tissue was fixed, sectioned and stained.

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[1] Curtis, A. H.: Bacteria in the Uterus, Surg., Gynec. and Obst., 1918, 26, 178.

In spite of the fact that recent work has shown that bacteria invade the blood stream comparatively frequently in many conditions, yet it seems that there must be an easier way for bacteria to reach the peridental membrane and the apical region of the teeth, or even the pulp cavity, than by the blood stream. All these results, as well as the peculiar pathology of the regions about the vessels, stimulated a belief that bacteria could be found in these diseased gingivae.

Cultural methods were tried at first, but the pieces of tissue were so small that, by the time the external surfaces were sterilized by heat or hot oil, there was always a suspicion that the bacteria inside had been destroyed at the same time, that is, granting that they were there, or on the other hand, that contamination from the outside had not been ruled out.

Thus far, bacteria have not been found in any large number of cases, and no attempt has been made to arrive at any conclusions as to the frequency with which they are found. The forms resemble those of the streptococci that have been found quite constantly in the pus pockets. For the great part, they lie about the vessels which are surrounded by the cell infiltrations already described, and are more frequently disclosed near the bottom of the pocket. They may be in small masses, or in groups of two, four, six or eight.

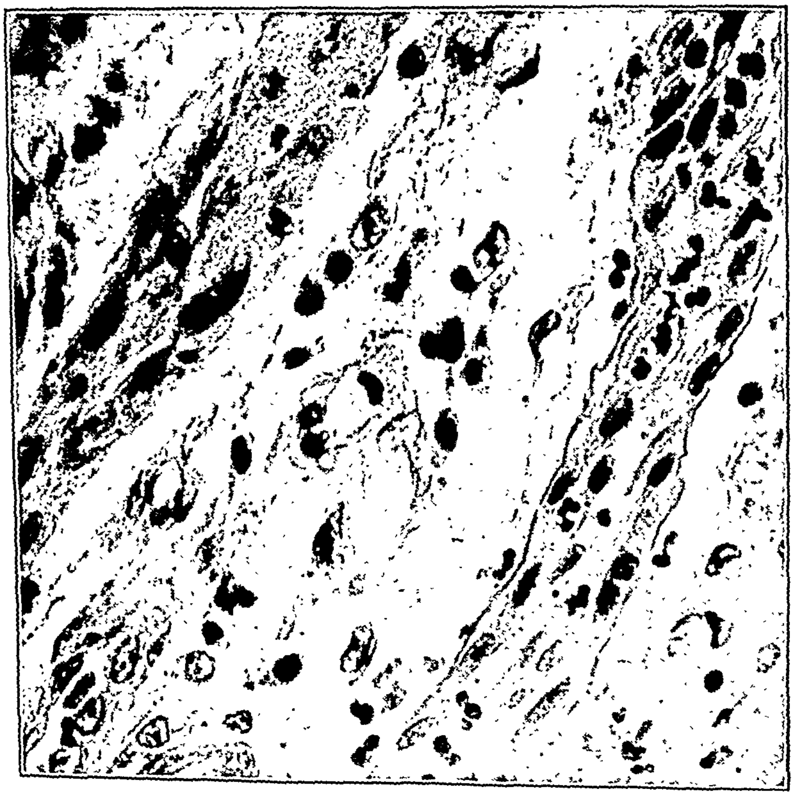

Fig. 3.—Polymorphonuclear leukocytes in the epithelial projections and the intervening spaces.

Their relation to the surrounding pathologic changes, or their ability to penetrate farther into the peridental membrane or down to the apical region, is conjecture and a subject for further investigation.

There is a very striking analogy between the location and the distribution of the lesions described in the foregoing and the distribution of the dental lymphatics, as demonstrated by Noyes[3] and Schweitzer.[4] It is known that the lymphatic vessels play an important part in the distribution of infection elsewhere in the body. With their demonstration in the peridental membrane as well as the pulp in a way that seems beyond equivocation, their importance from the standpoint of the part they play in the pathology of the tissues can hardly be overestimated. The distribution of these pathologic changes here described seems compatible only with the notion that they exactly parallel the distribution of the lymphatics in the same region. It answers the question why the line of progress is always downward and inward, why with a broad shelf-like erosion, as occurs under a salivary calculus, there is a broad band of infiltration, and why there is such an exact and abrupt division between the regions of infiltration and those free and uninvolved.

31 West Lake Street.

ABSTRACT OF DISCUSSION

Dr. Arthur D. Black, Chicago: Those who have studied the work which Dr. Noyes has reported to this section during the past two years will recognize the important relationship between his studies of the normal tissues, demonstrating the lymphatic channels in the peridental membrane, and Dr. Hatton's studies of the pathologic changes in this membrane. They corroborate each other, and both fit in with the most careful clinical observations of the progress of these infections. I would like to emphasize the difference, observed clinically, in the progressive destruction of tissue in the case of the pus pocket, beginning in the gingival line of the tooth, and of the chronic alveolar abscess, beginning at the apex of the root. In the one beginning at the gingival line we have noted the tendency to progress most rapidly toward the apex, forming a deep, narrow pocket, while in the alveolar abscess there has not been the same tendency to progress crownwise. Dr. G. V. Black referred to this as early as 1886, and in his recent book on Dental Pathology there is a paragraph calling attention to the fact that we must have a proper explanation of the difference in the progress of these two types of infection involving the same tissue. If the route of travel is by perivascular lymphatics, the clinical observations in both conditions are explained, because the flow of lymph is from the gingivae toward the apex, which would promote the progress of infection toward the apex in the case beginning as gingivitis and retard a similar progress crownwise in the case of the alveolar abscess.

The study of the movements of the ephithelium is very interesting, especially the apparent effort of the epithelium to line the pockets about the sides of the roots. It is possible that in a small percentage of cases pockets along the sides of the roots have been lined by epithelium, and the individuals have thereby been protected from systemic infection. In treating these cases by cutting away the tissues which overlie the surface of the roots, there occurs a rapid growth of epithelium over the cut surface down to the line of attachment of the root. All of the studies of the tissue changes support this plan of treatment as being the most practical method of eliminating the menace to the general health.

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[2] Rosenow, E. C.: Jour. Nat. Dental Assn., 1918, 5, 118.

[3] Noyes, F. B., and Dewey, Kaethe W.: The Lymphatics of the Dental Region, The Journal A. M. A., Oct. 12, 1918, p. 1179.

[4] Schweitzer, G.: Ueber die Lymph Gefässe des Zahnfleisches und der Zähne beim Menschen und bei Säugethieren, Arch. f. Mikr. Anat., Berne, 1909, 74, 927.

Dr. Eugene S. Talbot, Chicago: The most interesting part of this paper is the migration of the epithelial cells. These cells will migrate almost anywhere when they get started. The question naturally arises, How far will they extend into other tissues and how far will they extend down through the peridental membrane? My research of these subjects leads me to believe that very little work has been done on the migration of epithelial cells. I think Dr. Hatton will agree with me that it will be impossible for these cells to migrate through bony tissue. All his pictures showed that they are located in soft tissues, so we will have to set down as a fixed point that they cannot migrate through bony tissue.

The next question to settle is, How far will these epithelial cells migrate from the surface down into the soft tissues. My studies showed conclusively that the cells of the external epithelium do extend into the fibrous sac or peridental membrane, or far down to the ends of the roots of the teeth, before the bone begins to form. We have all seen epithelial cells in the peridental membrane at the root of the tooth. Another point that I did settle the other day conclusively and which has been attacked by eminent men is that these epithelial cells migrate into the fibrous sac from the external epithelium. Dr. Hatton and Dr. Black both mentioned the fact in regard to the lymphatics that these cells have a tendency to migrate downward. There is no question about that. In the last four or five years I have been doing extensive operations on dogs by using all the drugs that we use on our patients. You would be surprised to see the effects of these drugs and the absorption that has taken place by the use of a simple alkaline mouth wash by producing an irritation through the end of the root into these tissues, and I have many photographs which show this absorption and then the inflammation and abscess formation between the roots of the molars and also abscesses along the margin of the gum tissue. These experiments showed conclusively that by forcing an irritant through the end of the root an inflammation is set up and an abscess forms, not at the end of the root, but higher up between the roots of the molars and the gum margin.

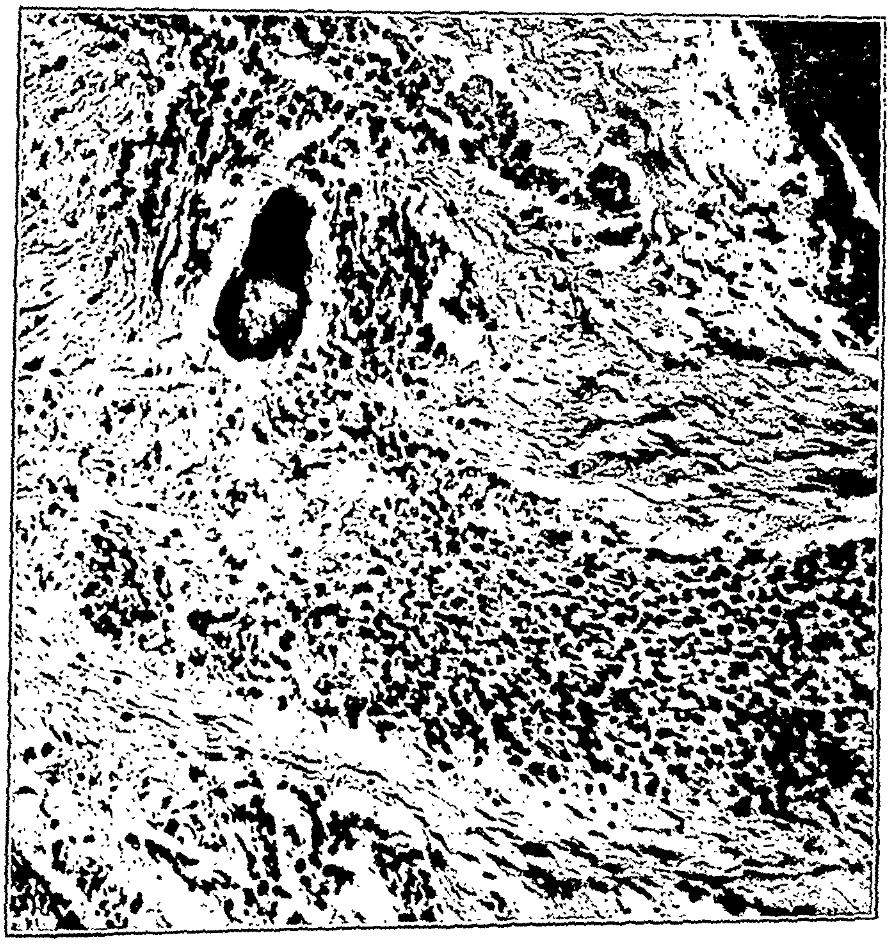

Fig. 4.—Perivascular round cell infiltration of the gingivae with destruction of the fibers of the peridental membrane.

Dr. V. H. Moon, Indianapolis: One or two points of Dr. Hatton's presentation coincide with our experience in the pathology of other tissues; namely, the thinning out and disappearance of fibrous tissue in connection with an acute inflammatory reaction. This phenomenon is found elsewhere, and it may be explained as being due to a proteolytic ferment which is produced by the inflammatory cells, which have the function or capacity for absorbing fibrous tissue. So, in pus formation, where there is actual destruction of tissue, the liquefaction of the tissue is due, in part, to the proteolytic ferment produced by the cells which infiltrate that region.

As to the migration of epithelial cells, we have learned in other lines of pathology to be conservative in our statements for the reason that the wandering cells of the body, which are found in almost every tissue, so closely simulate epithelial cells in their characteristics that it is difficult to decide whether we are looking at an epithelial cell or at one of these wandering cells. These wandering cells are very common in regions which are subject to chronic infection.

Usually when the fibrous tissue is disappearing as a result of inflammatory reaction, hyaline degeneration occurs, the tissue taking a homogeneous, rather deep pink stain. I have not noticed change of staining to a basic character except occasionally in tuberculosis and syphilis. After the fusing together and hyaline degeneration of the fibers there is a subsequent liquefaction, and the liquefied tissue and inflammatory cells are carried off by the lymphatics.

I did not wish to be misunderstood as referring to the true proliferation of epithelium to cover a granulating wound surface, which is a regular occurrence on all surfaces that are covered by epithelium. What I referred to was the migration through the tissues of epithelial cells. Epithelial cells will grow very readily from an adjacent epithelial surface. It can be demonstrated in connective tissue cultures in the test tube that as the fibrous tissue proliferates and grows the epithelial cells which are in culture with it will grow and spread along the surface of those fibrous tissue cells. The same thing occurs in the healing of wounds or in any wounds or granulating surface adjacent to the epithelial covering.

Dr. Frederick B. Moorehead, Chicago: The differentiation between epithelial cells and epithelioid cells, as Dr. Moon has just suggested, is very important. The proliferation of epithelial cells in continuity, as seen in skin grafting and in the repair of surface wounds, is well illustrated in clinical surgery. I see no reason why the surface epithelium should not grow into the pockets, even to a considerable depth, in the cases Dr. Hatton cited. I believe it will be seen that it is more a question of proliferation by continuity than by cell migration that these spaces are lined by epithelium. In pyorrhea pockets, so called, where the infection has been controlled, the conditions of heat and moisture are present and there is also enough mechanical irritation to stimulate the proliferation of epithelial cells. Moreover, there is always a tendency of epithelial cells to repair and cover defects.

Dr. Edward H. Hatton, Chicago: The possibility of the migration of epithelial cells has been explained by the other speakers. I believe that in all my specimens those projections are true epithelial cells, because I think that in every case, by means of serial paraffin sections, I am able to demonstrate that they are. I cannot say that I have found any true epithelial migration, except the growth into fluids.

OSTEOMA OF THE FRONTAL SINUS

W. W. BOARDMAN, M.D.

AND

MARY M. DONOVAN, M.D.

Associate Professor of Medicine and Assistant in Medicine, Respectively, Leland Stanford Junior University School of Medicine

SAN FRANCISCO

The occurrence of osteoma of the frontal sinus is relatively infrequent, as may be judged from the fact that Sewall,[1] after carefully reviewing the literature, found only ninety-two cases. In these cases the diagnosis was based on the presence of anatomic deformities secondary to the osteoma; in only a few had the roentgen ray been used to confirm the clinical impression, and in none had the condition been primarily diagnosed roentgenographically.

During the past six months the following two cases of clinically unsuspected osteoma of the frontal sinus have been discovered in the routine examination of skull plates.

Case 1.—A man entered the Stanford University Medical School Hospital, complaining of very severe headaches of long duration. In the early stages these had been frontal, but of late they had been principally occipital. Diffuse brain tumor seemed to be the clinical diagnosis. However, lateral stereoscopic skull plates showed an abnormal area of density in the region of the frontal sinus. Examination of sinus plates showed a uniformly dense, sharply outlined shadow in the right frontal sinus. On these findings a diagnosis of osteoma of the frontal sinus was made. At operation a hard, bony tumor was found firmly wedged into the sinus. It was successfully removed and the patient has been completely relieved of all symptoms.

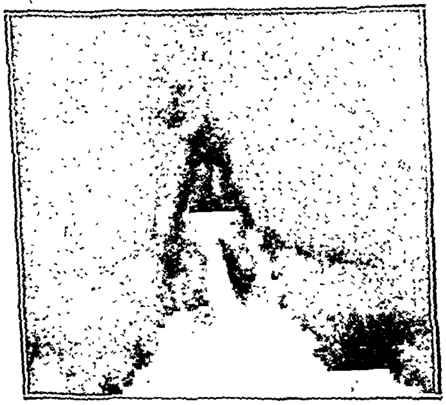

Fig. 1 (Case 1).—Anteroposterior view of osteoma of frontal sinus. The tumor occupies the right frontal sinus, although not completely filling it.

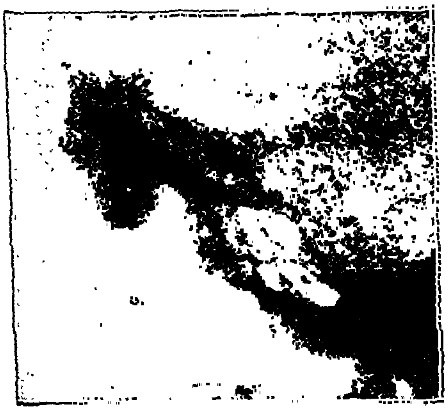

Fig. 2 (Case 2).—Lateral view of osteoma of frontal sinus. The tumor apparently does not quite fill the frontal sinus but extends downward into the ethmoid region. Its irregular shape is striking.

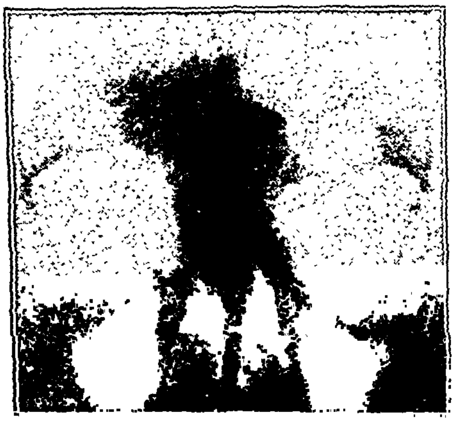

Fig. 3 (Case 2).—Anteroposterior view of same case. The tumor appears to involve one of the frontal sinuses more than the other. Its invasion of the ethmoid region shows plainly.

Case 2.—A young man came complaining of convulsive attacks, simulating epilepsy, but with no objective deformities suggesting osteoma. Examination of plates of the skull showed a large, dense, irregular shadow occupying the frontal sinus region, extending downward into the ethmoid region and backward into the cranial vault. Operation again confirmed the diagnosis of osteoma of the frontal sinus, but the patient died of a complicating meningitis.

The lesson to be drawn from these cases is not that osteoma of the frontal sinus can be diagnosed by the roentgen ray—that is self-evident—but that roentgenographic study of all doubtful head cases should be made as a routine.[2]

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[1] Sewall, E. D.: Ann. Otol., Rhinol. and Laryngol., 1918, **27**, 275.

[2] In addition to the reference already given, the following will be found of interest:
De Taranto, I. M.: Les osteomes de l'orbit, thèse de Paris, 1901.
Perthes, George: Arch. f. klin. Chir., 1904, **72**, 1022.

THE SPREADING POWER OF COAL OILS *

TORALD SOLLMANN, M.D.

CLEVELAND

P. N. Leech[1] and I[2] independently observed that the addition of a little asphalt to melted paraffin greatly lowered its surface tension toward water, so that a very much thinner and more even film than with pure paraffin is formed, and very much more rapidly. In reflecting on this phenomenon, it occurred to me that it might be utilized to secure rapid and extensive spreading of the oil in fighting mosquito larvae, thus increasing the efficiency and lowering the cost of the oil treatment.

Experiments showed that kerosene has a low spreading power, and that this is actually enormously increased by the addition of asphalt. If kerosene is dropped on a dish of water, it collects into rather small plaques, and spreads very slowly, if at all. If 0.1 per cent. or more of asphalt varnish ("B-asphaltum, Cleveland Window Glass Company") has been added, it spreads at once over the entire surface of the water.

Similar results were observed with gasoline.

However, unrefined oils generally spread perfectly without the addition of asphalt. They presumably already contain sufficient asphalt-like products.

The following crude oils spread perfectly without the addition of asphalt:

Pennsylvania Lower District Crude.
Light Tiona Crude.
Kansas-Oklahoma Crude.
Residue oil left after distillation of the lighter product.
A sample of "No. 4 Road Oil" did not spread.

SUMMARY

The "spreading power" of oils on water is important in their use against mosquito larvae. It should therefore be ascertained, at least by the rough test herein described.

The spreading power depends largely on the presence of asphalt-like products. Most crude oils contain these in sufficient quantity. Some, however, and especially refined oils, need the addition of asphalt. Kerosene requires about 0.1 per cent of asphalt varnish.

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* From the Department of Pharmacology, Western Reserve University School of Medicine.

[1] Leech, P. N.: "Ambrine" and Paraffin Films, The Journal A. M. A., May 19, 1917, p. 1497.

[2] Sollmann, Torald: Suggested Formulas for Paraffin Films, The Journal A. M. A., April 7, 1917, p. 1037.

Clinical Notes, Suggestions, and New Instruments

BONE-HOLDING FORCEPS *

Robert Emmett Farr, M.D., Minneapolis

The multiplicity of bone forceps designed to overcome the displacement of bones is sufficient evidence that most of these devices have certain shortcomings. In order to meet the requirements, such a device must have sufficient strength, and adaptability to bones of different diameters. Its application should be simple and it should have means of overcoming displacements by manipulations.

The instrument herein described consists of two long bone-holding forceps which may be readily united to each other by a carriage and worm-drive arrangement which requires the forceps to be brought parallel to each other in one plane only. Once assembled, extension may be made by means of the worm drive, which is operated by means of a two-way reversible ratchet. Movement in one plane may then be accomplished by moving the handles of the forceps over the screw, which acts as a fulcrum. Movement in the lateral plane is achieved by means of a ratchet propelling the carriage on one stationary blade of the forceps. It will therefore be seen that once the device is assembled, displaced fragments of bone may be brought into any desired position by the manipulation of either of the ratchets or of the forceps handles. The bone-grasping end of the forceps is so designed as to allow their application to bones of any size and to leave free approximately one-third of the surface of the bone; these free surfaces lie in the field of operation so that transplants or other mechanical appliances may be used without the necessity of removing the forceps.

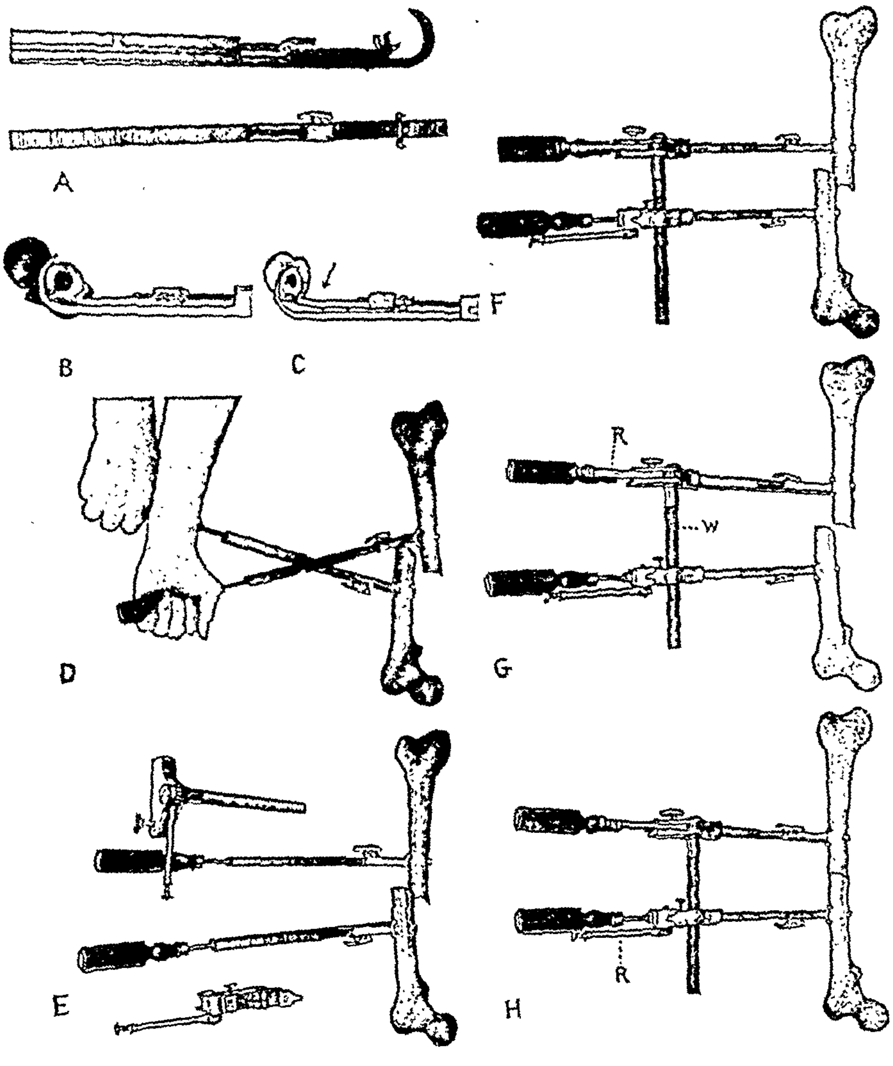


Fig. 1.—*A,* Bone-grasping parts of forceps; *B,* forceps grasping large bone (femur); *C,* forceps grasping small bone (ulna); note change in position of proximal grasping surface, bringing transplant area upward into field; *D,* forceps applied to femur before assembling; *E,* forceps parallel; worm drive, split nut and carriage ready for assembling; *F,* forceps assembled; *G,* extension applied by means of worm drive (*W*) propelled by ratchet (*R*); *H,* lateral displacement overcome by means of ratchet (*R*).

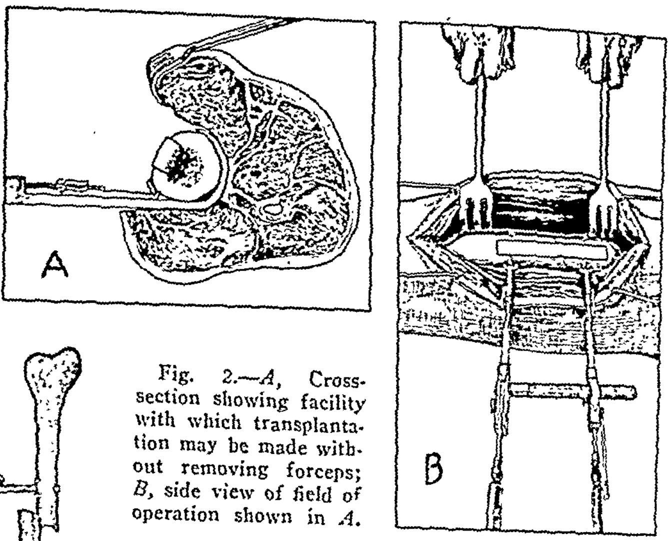


Fig. 2.—*A,* Cross-section showing facility with which transplantation may be made without removing forceps; *B,* side view of field of operation shown in *A.*

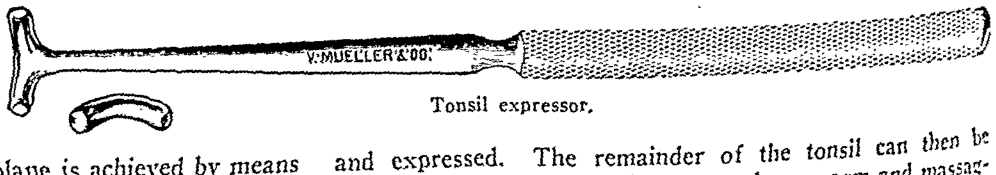
A TONSIL EXPRESSOR

Julius H. Hess, M.D. (Chicago)
Major, M. R. C., U. S. Army
Fort Riley, Kan.

Examination of the teeth and tonsils in a large series of cases of endocarditis, rheumatism and chorea has demonstrated that many of the patients are suffering from alveolar abscesses and infected tonsils. The removal of such teeth is a simple matter even during the course of the disease, but only a few men have had the temerity to advise tonsillectomy at the height of the infection in acute cardiac conditions. Believing that much could be accomplished by evacuating the pus which has accumulated in the tonsils in many of these cases by expression and massage of the tonsils, I have devised an instrument which has been found of practical value in our cardiovascular and rheumatic wards for diagnostic purposes and frequently for treatment.

Set at right angles to a 7½-inch steel handle is a cross-piece of steel three-quarters inch in length and three-sixteenths inch in diameter, well rounded on all its surfaces and highly polished. The crosspiece has an anterior-posterior curvature of three-sixteenths inch and a curvature of one thirty-second inch on its upper surface.

The instrument is used by passing it in at the angle of the mouth opposite to the tonsils to be expressed and by applying it first at the superior angle of the fossa external to the pillars and pressing upward and outward. In this way the superior pole of the tonsils is exposed and expressed. The remainder of the tonsil can then be exposed by anchoring the instrument by one arm and massaging the tonsils from above downward with the other arm, which is made possible by the concave upper surface of the instrument. At all times the instrument should be kept in front of the anterior pillar.



Tonsil expressor.

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* Read before the Section on *Orthopedic Surgery* at the Sixty-Ninth Annual Session of the American Medical Association, Chicago, June, *1918.*

The advantages of the instrument are that: (1) it offers a simple means of exposing the entire tonsil for diagnostic purposes; (2) it can be used to advantage in expressing pus from the tonsils for bacteriologic examination; (3) the tonsils can be evacuated without an anesthetic without pain to the patient two or three times a week, and the patients rarely object to the repetition of the treatment. In very sensitive throats a 2 per cent. solution of cocain may be used before treatment.

In many cases one or more large pus pockets are present. The most frequent seat of the pus pockets in our cases has been near the upper pole between the anterior pillar and the tonsil. This part of the tonsil is often completely buried behind the pillar and cannot be exposed by simple retraction of the pillar.

Massage and expression of the tonsil in no sense replaces tonsillectomy. It is recommended only as an emergency measure where the radical operation is contraindicated during the height of an infection.

ACCIDENTAL INJECTION OF BILE DUCTS WITH PETROLATUM AND BISMUTH PASTE

Adolph Reich, M.D., New York

Miss J. de M. had a pelvic operation two years before consulting me. A few days after the operation she was taken with pain over the region of the liver, and a swelling, which appeared in the midaxillary line, was incised and discharged pus, leaving a persistent fistula between the tenth and eleventh ribs. She asked to be relieved of this fistula.

In order to know the direction of this fistula, I injected about 2 ounces of petrolatum paste and bismuth with a melting point of 110 F. Immediately there was considerable pain in the pit of the stomach, the following day the patient's temperature was 102 by mouth, the urine was dark brown, she was jaundiced, and she could not hold anything on her stomach. Figure 1 shows the bile ducts filled with the paste down to the duodenum.

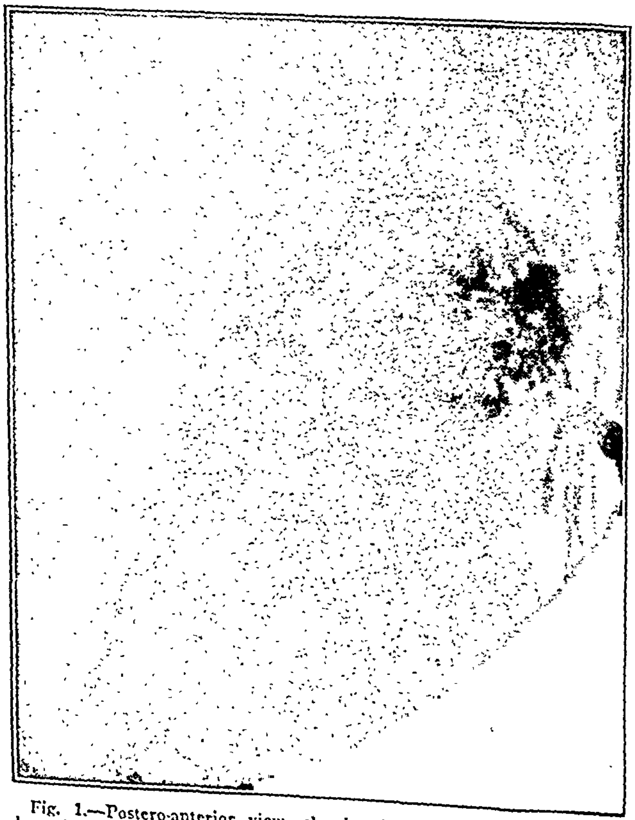


Fig. 1.—Postero-anterior view, showing bile ducts filled with paste down to the duodenum.

The treatment consisted of local hot applications, morphin for the pain, calcined magnesia one-half ounce every two hours until the bowels moved freely, and injection of warm olive oil through the fistula, about 1 ounce or more every three hours. The next morning the bowel movements had a dark slate color and kept so for two weeks, and the temperature fell to normal within one week, and all symptoms of the obstructive jaundice passed off gradually.

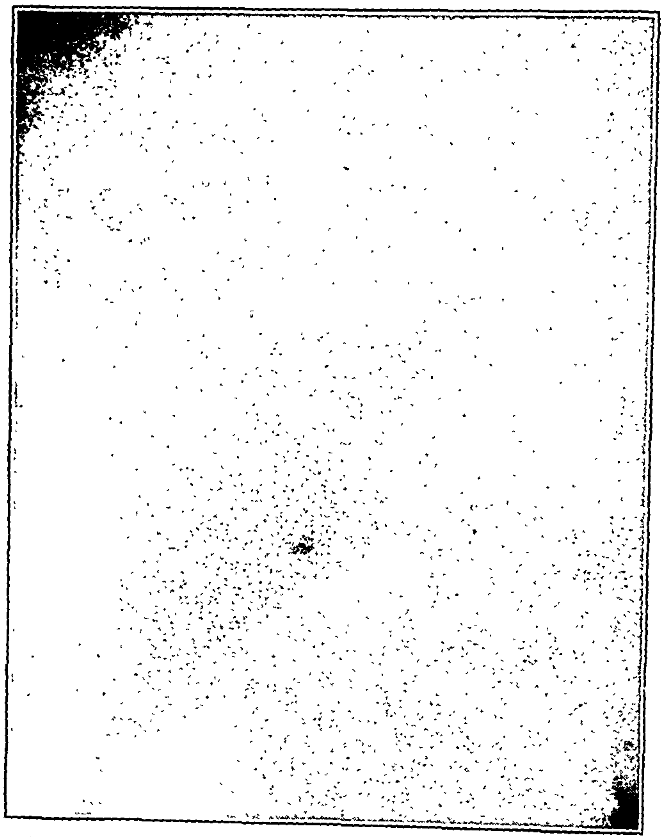


Fig. 2.—Anteroposterior view taken recently; bile ducts free from bismuth; a few grains of bismuth near the opening of the fistula.

Figure 2, taken recently, shows the bile ducts entirely free from bismuth and only a few scattered grains of bismuth near the opening of the fistula. Pus is discharged only occasionally, and some of the bismuth finds its way out.

245 West Twenty-Fourth Street.

STUDIES OF ROENTGENOGRAMS OF THE ACCESSORY NASAL SINUSES

WITH A DESCRIPTION OF A NEW METHOD OF TAKING SUCH PICTURES: PRELIMINARY NOTE

Max Unger, M.D., New York

In common with other nose and throat specialists, I have felt the disappointment resulting from the lack of help in diagnosis furnished by roentgenograms of the accessory nasal sinuses, especially in cases of suspected ethmoid and sphenoid disease.

The method now employed in the taking of roentgenograms of the accessory nasal sinuses is to put the plate in front of the patient's face and to shoot the roentgen ray through from the back of the head. This gives us an excellent picture of the frontal and maxillary sinuses, but the recognition of the ethmoids and sphenoids is a matter of guesswork. This is due to the fact that the latter cells are small, deeply situated and overlapped by the frontal and maxillary sinuses, the turbinates and the nasal bones.

Accordingly, I have devised a new method of taking roentgenograms of the sinuses. I employ a roentgen-ray film that is cut to the shape and size shown in Figure 1. This film is wrapped in waterproof paper, similarly to dental films. A piece of card-board is included next the emulsion side of the film for purposes of protection and ease in handling.

When a picture is to be taken the film is inserted into the subject's mouth, the narrow end touching the posterior pharyngeal wall and the broad end projecting from the mouth. The roentgen-ray tube is adjusted above the head so that the rays pass directly downward and at right angles to the film. Sometimes a slightly obtuse angle forward is necessary, especially when the film cannot be pushed back completely. Sometimes, also, cocainization of the throat is necessary to overcome gagging.

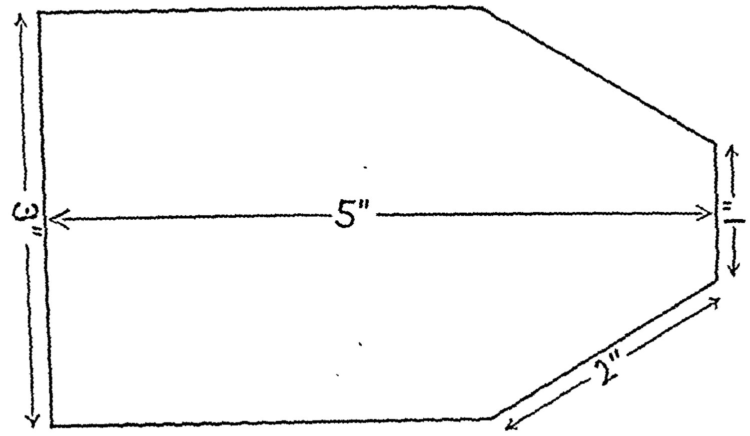


Fig. 1.—Shape of film.

This method has the advantage that the pictures show all four accessory nasal sinuses in isolated positions, without any overlapping. The ethmoids and sphenoids are shown best, but the frontal and maxillary sinuses are also shown in their horizontal dimensions, knowledge of great value when operations on these sinuses are contemplated. The maxillary sinuses are also shown in their relations to the teeth.

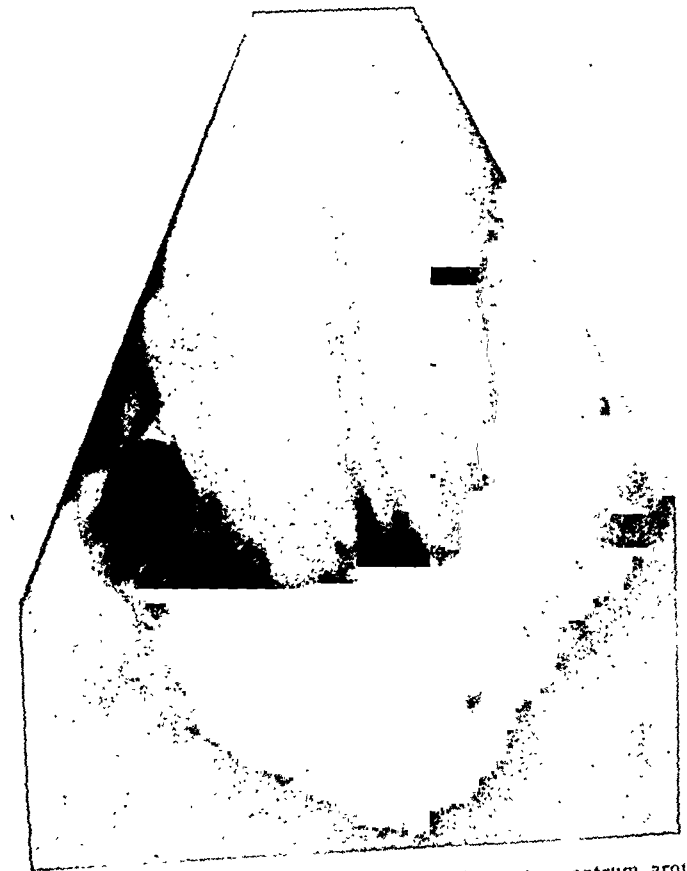


Fig. 2.—Sphenoid at apex; ethmoidal cells in center; antrum around last two teeth on left.

The method should prove of value in the investigation of fractures and the location of foreign bodies, such as bullets, at the anterior part of the base of the skull.

This is a preliminary report and deals only with the use of this method on the cadaver. A later communication will deal with its use on the living.

253 West Forty-Second Street.

AN AUTOMATIC DISTRIBUTOR FOR NEUTRAL SOLUTION OF CHLORINATED SODA (DAKIN'S SOLUTION)

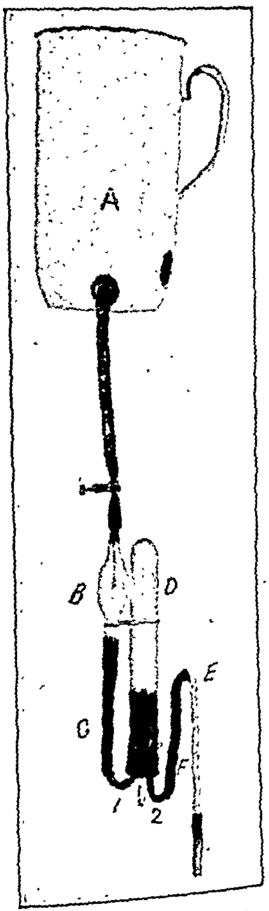
LYMAN J. STRONG, M.D., BUFFALO

The successful use of Dakin's solution (neutral solution of chlorinated soda) depends on its delivery in sufficient quantity to all parts of the infected wound at regular and frequent intervals. These conditions can be obtained by a simple apparatus.

Wounds vary in size; therefore, this apparatus has two controls, one for time and one for quantity.

An irrigator can, *A*, is elevated on the head of the bed. A short piece of rubber tubing connects with a drop tube, *B*. A screw clamp on this piece of tubing controls the rate of flow through the dripping apparatus. For example, to deliver 80 c.c. every two hours, the screw clamp is set so that 10 drops each minute fall from the drop tube.

A large size test tube, *D*, of about 100 c.c. capacity, is fitted with a three hole rubber stopper. This test tube serves as a reservoir to collect the solution from the drop tube. Through one hole of the stopper a piece of glass tubing, placed so that it extends the entire length of the test tube, controls the pressure in the test tube when emptying and filling. Through the other two holes of the stopper are pieces of glass tubing bent in short-armed U's. U Tube 1 and U Tube 2 convey, respectively, Dakin's solution into and out of the test tube.



Automatic distributor for neutral solution of chlorinated soda.

U Tube 1 is connected with the outflow from the drop tube by a rubber tube, *C*. U Tube 2 is connected with U Tube E, which has one long arm and one short arm. This is done by a piece of rubber tubing, *F*, to the short arm. This rubber tubing should be long enough for U Tube E to be elevated or lowered a distance equal to the length of the test tube. Raising U Tube E increases the quantity of fluid discharged into the wound. For example, to deliver 80 c.c. every two hours, the drip is set at 10 drops per minute. U Tube E is set three-quarters up the test tube.

The long arm of U Tube E connects with regularly used Dakin's tubes that are planted in the infected wound.

As fluid runs from the can through the drop tube; it is conveyed by Tube C into the test tube, which stops it from flowing into the wound until it reaches the level of U Tube E. When it reaches this level a siphon is formed, and the quantity of fluid in the test tube is expelled at one time into the wound.

This apparatus is practical and has discharged fluid at intervals of one minute and intervals of two hours with the regularity of a good clock. The quantity may be varied from 5 to 100 c.c. It can be made in any hospital or laboratory. It depends entirely on gravity, so that it always works.

482 Williams Street.

Conditions Demanding Blood Transfusion.—Positive indications in chronic anemia will be found in the case records (prolonged suppuration, infection and fever, and in sluggish wound healing), in the information derived from repeated blood counts, hemoglobin estimations, and blood pressure determinations.—*Review of War Medicine and Surgery.*

Military Medicine and Surgery

RAPID METHOD FOR DETECTION OF OVA OF INTESTINAL PARASITES IN HUMAN STOOLS

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FORT SAM HOUSTON, TEXAS
AND
MARSHALL A. BARBER, Ph.D.
Major, Sanitary Corps, U. S. Army
CAMP JACKSON, COLUMBIA, S. C.

The military significance of infection by hookworm disease among recruits and troops of the United States Army might be inferred from its known clinical symptoms. That it is characterized by anemia, edema, intestinal disturbances and by a disinclination to physical effort is well known. Testimony and statistics add to these charges the facts that morbidity and mortality tend to be higher among troops from the area of hookworm infection than among those from outside that area. Comparisons of the records of examinations of new recruits from the hookworm area[1] reveal the fact that white men with this infection make lower records than do the noninfected, literate and illiterate. There is also some evidence that hookworm infections tend to impede the progress of recruits in discipline and instruction. The guard house, venereal isolation camp and the hospital show higher rates of infection than does the camp as a whole. Hookworm disease appears to be one of the causes tending to increase the ratio of noninfectives among our troops and to lower the standard of their efficiency.

Because of the numbers to be examined, the nature of the available equipment and the desirability of not encroaching on the duties of a medical staff already occupied with more important work, it was essential that any method used in detecting this infection should be rapid, accurate, simple, adapted to the utilization of a changing personnel in large part, and that it should not require elaborate apparatus or extensive laboratory equipment.

COMPARISON OF VARIOUS METHODS

The direct microscopic examination of a small sample of the fecal specimen is inaccurate because of the minuteness of the sample used, and impracticable because of the length of time required to make a fair examination. The greater efficacy of the brine flotation-loop method in the detection of worm ova as compared with the ordinary smear method is shown in the accompanying table, in which nine-day periods are compared. The salt flotation method is obviously inferior in the detection of *Strongyloides*.

Only hospital cases, based on records at Camp Jackson, are included in the table. The great variability in the daily hookworm precentages is probably due to the varying proportions of patients from the Northern states.

The centrifuge method is at once precluded by the difficulty, if not impossibility, of securing an adequate number of instruments to accomplish a work of such magnitude, and the added difficulty of securing the requisite tubes and other glassware essential to equip and maintain facilities adequate to care for the number of examinations to be made. It also calls for extraordinary care in cleaning the glassware used, for hookworm eggs are quite adhesive to the surface of glass. This is a difficulty of considerable importance when laboratory helpers are inexperienced, and adds much to the burden of supervision.

The centrifuge is also inaccurate, probably because of the small size of the samples used. The standard fecal sample collected for this method in the Army is contained in a 2-dram vial. Negatives for hookworm by this method as used by the senior author in the Department Laboratory of the Southern Department were examined by the salt flotation method by us and found in about fifty examinations to show a 40 per cent. increase in infections. That is, the percentage was increased from 10 to 14. This was borne out by the fact that, whereas the percentage of infection by the centrifuge method was about 8 per cent. in 7,000 examinations, it rose to from 14 to 20 per cent. among troops from the same general localities when the salt flotation method was applied.

COMPARATIVE RESULTS IN DETECTION OF OVA

1918 June	Ordinary Smear Method Number Examined.	Positive Hookworm.	Percentage Positive.	Remarks.
10	205	13	6.3	During nine-day period the same total of examinations as that of the hookworm gave the percentages: Ascaris ....1.1 Hymenolepis nana .....0.6 Trichuris ....0.3 Strongyloides ....0.6 Oxyuris 0.0
11	132	23	17.7	
12	153	24	15.7	
13	135	19	14.1	
14	150	11	7.3	
15	116	9	7.7	
17	144	3	2.1	
18	106	14	13.2	
19	99	11	11.1	
	1,240	127	10.2	
	Brine Flotation-Loop Method			
20	109	40	37.5	During nine-day period the same total of examinations as that of hookworm gave the percentages: Ascaris ....1.1 Hymenolepis ....0.8 Trichuris ....0.8 Oxyuris ....0.08 Strongyloides 0.0
21	96	34	35.4	
22	146	50	32.1	
24	146	48	34.1	
25	152	39	26.2	
26	128	26	20.3	
27	120	26	21.7	
28	120	22	18.3	
29	116	25	21.6	
	1,133	310	27.1	

The elaborate sieve-sedimentation method of Hall[2] is not adequate to the military necessities because of the fact that it can be operated only in a well-equipped laboratory and requires an expensive, elaborate and somewhat permanent installation. It seems not to be rapid, and would require great care in cleaning to prevent a carrying on of infection, when the sieves are used in rapidly succeeding examinations. Its accuracy in cases of light infections should also be tested.

The culture method of Looss[3] and of Fülleborn[4] has been used by the senior author in the laboratory of the California State Board of Health. This is an exceedingly accurate method, revealing the lightest of infections. But it requires regulated incubators to run to a schedule of operations, constant supervision and inspection, a delay of about five days before results can be reported, and considerable washing of glassware, including, when paper Petri dishes are used for culture, the centrifuge tube (possibly omitted), Syracuse dish and a pipet. The active larvae make the detection of infections quickly decisive in the case of positives. Skill in differentiating *Strongyloides* larvae from those of hookworm is essential. The use of culture mediums and water free from free-living earth and water nematodes is also a desirable precaution. This method is thus not readily adapted to military conditions by reason of the installation required, the amount of cleaning and the precautions necessary. The delay incident to the hatching period so extends the time between collection of the sample and report of the results as greatly to increase the material on hand under supervision, and the bulk of the clerical work awaiting completion. No opportunity has been afforded to compare it in detail with the brine flotation-loop method as to their relative accuracy in detecting light infections. The culture method detects hookworm and *Strongyloides*, both with free-living stage, but does not give any clue to the presence of the cestodes, and of *Ascaris, Trichuris* and *Oxyuris*.

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[1] By Capt. P. F. Pittenger of the psychologic board at Camp Travis.

[2] Hall, M. C.: Jour. Lab. and Clin. Med., 1917, **2**, 347.

[3] Looss: Egypt, Min. Educ., Rec. School Med., 1905, **3**.

[4] Fülleborn: Arch. f. Schiffs- u. Trop. Hyg., 1911, **15**, 363.

THE BRINE FLOTATION-LOOP METHOD

In view of the difficulties attending the use of the methods enumerated above, under Army conditions, the method here described was devised after considerable experimentation. The senior author in his work on hookworm in the gold mines of California for the California State Board of Health had adopted the culture method after prolonged experimentation with the centrifuge method and unsuccessful attempts to find a satisfactory sedimentation, flotation or filtration method that would effectively utilize a large sample and detect light infections. The junior author had had long experience in Malaysia, China and the Fiji Islands with the International Health Board in the critical use of various methods of examination, especially that of the centrifuge, under field conditions.

The method finally perfected by us may be designated as the brine flotation-loop method. It consists in mixing a large fecal sample thoroughly in concentrated brine, in a paraffined paper can of from 2 to 3 ounces capacity, forcing the coarse float below the surface by means of a disk of No. 0 steel wool, and then allowing the can to stand one hour for the ova to ascend. The surface film is then looped off with wire loops, one-half inch in diameter, and examined on a slide without a cover glass.

The method has been tested in the Southern Department under the senior author's direction in more than 100,000 examinations of varying ratios and degrees of infection by about seventy-five different examiners, under diverse field conditions, and has been found to be efficient and practicable.

TECHNIC

The stools for examination are collected at reveille in the morning at the company latrines by a collecting squad consisting of sixteen enlisted men in charge of a sergeant and under command of a medical officer. The men from a given company are in charge of a line officer. They are marched to the latrine in alphabetical order and the roll is called from the roster by the sergeant in charge of the men. On admission to the latrine each man is identified and given a container, bearing the designation of the organization and his roster number, a sheet of waterproof paper, and half a tongue depressor as a collecting stick. He is instructed to defecate on the paper and to fill the can one third full of feces. Men unable to furnish a specimen are given salts, under the supervision of the medical officer, and are moderately exercised. The men submit their sample to the collector for inspection on leaving the latrine to prevent the passing in of empty cans. Substitution is forbidden. In practice, this squad can collect the specimens from an entire regiment, make the first delivery at the laboratory at 7:30 a. m., and complete the collections at 10 a. m. On an average from 3 to 10 per cent. of the organization on a complete roster fail to furnish specimens by reason of absence, detached service or failure to defecate.

The receptacles used as containers for fecal specimens for examination for ova of intestinal parasites serve not only to receive the fecal specimens at the latrines but also as the mixing dishes from which the ova are subsequently looped for examination, and themselves bear the results of their examination to the recorder's table. The use of glass or tin containers is precluded by the cost, labor of cleaning and danger of carrying over of infection by adhesion of ova to the sides of the dish. We have therefore used paper and pasteboard containers, which may be wasted after use. We have in emergency used paraffined paper drinking cups and standard hospital sputum cups, but have found the most satisfactory container to be the standard 2-ounce paraffined paper drug cans with tin bottom and paper top. Similar cans with paper bottom and top are more liable to be unsealed by the solvent action of the contents. Open drinking cups permit evaporation and increase the odor and liability of carrying over of ova by flies. Heavy paraffined "Kleen Kup" tumbler-shaped containers are satisfactory for shipping specimens some distance.

These cans are about 1½ inches in diameter and 2½ inches high and are made up from specially constructed paper tubing made from stock paraffined on the inner face. Their capacity is normally 2 ounces and varies from 50 to 80 c.c. according to the brand or factory. Certain brands either have no coating or are so lightly coated that it was necessary to treat them to a dipping or to an inside coating of hot paraffin or sodium silicate to render them brine-proof. Paraffin-coated brine-proof cans that will resist soaking up by brine and feces for a number of hours can be obtained from commercial sources at present and are fairly satisfactory for this method of stool examination. The practical advantage of containers of these dimensions is that they will rack snugly in the compartments of the pasteboard fillers which hold three dozen each, of standard shipping cases for eggs, which hold thirty dozen each. To facilitate the handling of a single filler we have used specially constructed pasteboard trays with tape loops for handles into which a single filler fits. These trays are very convenient for use in the preliminary marking of the cans, the arrangement of the numbered cans and for subsequent handling at the latrines and in the laboratory.

In the examination of troops in the Army, each can is marked with the designation of the organization and the roster number of the man whose specimen it is to receive. Thus, 305 Cav. H-16 is for the sixteenth name on the roster of Troop H of the Three Hundred and Fifth Cavalry. Cans were at first marked on both top and side: the former for convenience in picking out a particular can at the latrine, the latter for use in the laboratory. These cans were marked with wax pencils or on strips of adhesive tape in ink on the tin tops, and the sides similarly marked or with lead or colored pencil or in ink. Pasted typewritten labels are unsatisfactory, as they may soak off if wet or peel away if dry. The most satisfactory labeling thus far found is that written in "Eternal" ink. This is not removed by water or brine, and sinks into the paper so deeply that it cannot be rubbed off. It is also clearly visible on the wet can. The cans for a given organization, such as a company of a regiment, are serially numbered, and on receipt at the laboratory from the latrine are usually not in numerical order. In order to detect shortages, eliminate confusion of indistinctly written numbers, and facilitate entering results on the numerically and alphabetically serial roster, the cans are first arranged in numerical order on a number board and then racked in order in the sockets of serially numbered wooden racks holding ten cans each. They are then passed to the mixing table where they are prepared for the examiners.

The stool is prepared for examination by stirring the specimen thoroughly in concentrated brine with a small wooden stick until the brine is considerably discolored and the contained ova released from the feces. The amount of stool to be stirred varies with its consistency and composition. Not more than one third of a canful is ordinarily used; if the sample submitted is too generous, the amount is reduced. The can is filled nearly full with brine, and the stool, if putty-like and resistant, is broken up against the sides of the can.

In some instances of putty-like stools the release of the ova is facilitated by scouring the stool up with steel wool on the end of the stick, against the side of the can. After stirring until the desired consistency is attained, the stick is withdrawn and a circular filter of No. 0 or No. 1 long fiber steel wool is carefully pushed down through the fluid to the bottom of the can with the stick. This effectively removes from the surface the lighter coarser float, breaks up the air bubbles, and leaves the surface clear of coarse particles and suitable for looping of the floating ova. Stirring the stool with the electric soda mixer gives quickly a suspension of the stool, but forms too many air bubbles for satisfactory looping.

If too much wool is used it will interfere with the ascent of the ova. If too little is used it will not remove the float. As a rule a lightly compressed disk, one-eighth to one-fourth inch in thickness, is sufficient. From 1 to 2 pounds are sufficient for 1,000 specimens. Other materials, such as disks of wire netting, excelsior and southern moss will serve the same purpose, but less successfully by far. The southern moss may introduce fresh water nematodes and their eggs and larvae.

Since there is danger of contamination of adjacent cans through stirring and in putting in the wool by splashing over from one can to another, it is a wise precaution to remove the can from the rack during the preparation. As an additional precaution to prevent the accidental transfer of a stick from one can to another during the mixing of a rack of cans, it is customary to place sticks in all of the cans and leave them there when not in use until the entire rack is finished.

The specimen is prepared for microscopic examination by looping off the surface film to an ordinary glass slide. The loops for this operation are prepared from unraveled window screen or similar fine galvanized wire. They can be made up rapidly from 6-inch squares of wire netting by twisting the individual wires into the loops. Each loop is formed around a glass tube or wooden cylinder about one-half inch in diameter, the shorter end twisted around the longer, which forms the shaft to close the loop, which is then bent out at right angles to the shaft. The surface film will usually adhere to the wire when the submerged loop is lifted from the brine. Ova in the film are removed with it. It has been found advisable to loop the surface near the sides as well as the center of the can. For this purpose the loop may be molded to the arc of the can on one side.

The number of loopfuls necessary to make a fair sample for microscopic examination depends on the capacity of the film removed. About ten loopfuls will skim the entire surface of the can and form a pool of brine conveniently handled on an ordinary microscope slide with a mechanical stage. One skimming does not by any means remove all the ova, as they are not all in the immediate surface. If ova are present in any numbers they may be obtained at once, if the stirring has been thoroughly done. It is customary for the cans to stand for one hour to allow the ova to accumulate in the upper layers. Ova may still be found at the surface after twenty-four hours, but their numbers are decreased. In warm weather they may have entirely descended in five hours.

The following test shows the relative hourly abundance of hookworm ova in the surface film on a can mixed with brine at 8:45 a. m., until they disappeared:

The brine and ova were poured off into another can at 9:15, being distributed, by the pouring, throughout the fluid. Four loopfuls were placed on the slide and ten fields were examined. At 9:15 a. m. there were 69 ova recorded; at 10:20, 169; at 11:20, 150; at 1 p. m., 85; at 2:10, 20; at 3:15, only 3, and at 4 p. m. none. The temperature during the period was from 90 to 95. The maximum number of ova appeared at the surface about an hour after they were uniformly stirred, and seven hours after mixing, all had descended from the surface.

From tests made under other conditions it is evident that there is considerable variation in the rate of ascent and descent of the ova in the brine in different stools and at different temperatures.

For a time we marked off an ellipse 1½ inches by ¾ on the slide with a wax pencil to assist in confining the pool of brine on the slide, but this was later abandoned as unnecessary.

In the cases of viscid, opaque and fatty stools, considerable dilution may be required. This may be done with a few drops of a mixture of equal parts of glycerin and brine stirred into the pool on the slide. The glycerin clears the more opaque particles and renders the ova more easily visible.

The following modification of the salt flotation-loop method has been used by the junior author at Camp Jackson, S. C., for routine hospital examinations and for a limited number of stools sent from the camp:

Specimens are sent into the laboratory in tin containers provided with lids. Salt flotation and loops are used exactly as in the method describe below, but instead of filtration by steel wool the coarser floating particles are skimmed off by means of a spoon before the ova have time to rise. The spoon is scrubbed with a brush and carefully washed under the hot water tap after each use. When cans are used a second time they are very carefully cleaned and dried.

It is obvious that the sole advantage of this modification is in the saving of materials. Further, it is adapted only to work on a comparatively small scale and in a laboratory supplied with skilled workers and with a hot water tap for the proper cleaning of utensils. It is not to be recommended for field work on a large scale or for any work in which pasteboard containers and steel wool are obtainable.

COMMENT

Contamination of adjacent cans by droplets of the surface film splashing over from an infected can to a negative one may readily occur when the loop catches on a stray fiber of the steel wool and is suddenly released, or when the film in the loop breaks on contact with the slide. For this reason the can and slide should be moved away from the rack while the pool is being looped off. The viscosity of the surface film may vary greatly with the nature of the stool. It is markedly decreased by slight additions of such disinfectants as tricresol and phenol (carbolic acid) or by alcohol, which is useful in removing air bubbles from the surface. Formaldehyd solution tends to curdle the mixture, and delays the ascent of the ova and reduces the numbers in the surface film.

These variables, which affect the opacity and contents of the loop and the number of ova it removes, render any uniformity of looping and resulting thoroughness of examination practically impossible. In practice from three to seven loopfuls are generally used; but the number in the course of numerous examinations will vary from one to twenty. It is obvious that these variables will introduce a margin of error in the detection of ova only among the lighter infections.

The ova of parasites such as *Ancylostoma duodenale*, *Necator americanus*, *Ascaris lumbricoides*, *Oxyuris vermicularis*, *Trichuris trichiuria*, *Taenia saginata*, *Taenia solium*, *Hymenolepis nana*, *Hymenolepis diminuta*, and *Dipylidium caninum* and of trematodes are floated up by the brine into the surface layer of the pool without distortion or noticeable change in appearance during the usual period of examination. Cysts of *Endameba coli* and *histolytica* and of *Giardia intestinalis* are also floated up. Since the ova are at the surface, it is not advisable or necessary to use a cover glass.

The surface of the pool of brine is thoroughly searched with the aid of the mechanical stage. To reduce the amount of focusing, the convexity of the surface of the pool may be reduced by spreading it over the slide and extending the amplitude of the movements of the mechanical stage.

The microscopic equipment most useful is the typical high grade instrument with 16 and 4 mm. objectives and × 5 or 6.4 and × 10 oculars or their equivalents. The searching is done with the low power objective and low power ocular since the latter is less tiring in long-continued examinations. For closer scrutiny the 4 mm. objective may be used with care on objects in the surface film without cover glass.

To render the ova more distinctly visible it is essential that the microscope be provided with a substage condenser and that the illumination be reduced by closing the iris diaphragm or lowering the condenser so as to increase the sharpness of definition of all objects in the field and to bring the egg membranes into relief. This assists in the quick differentiation of ova from objects of similar shape and opacity. The amount of searching necessary to make a fair examination is a function of so many variables that no arbitrary rule can be laid down. The degree of dilution, stirring, flotation, the amount of the surface fluid in the pool, its extent and convexity, the consistency and opacity of the fluid and its solid contents, the nature and number of the particles floated to the surface, the number and size of air bubbles, fat cells, oil globules and starch cells, all combine to complicate the search for ova. It is advisable to search a considerable area rapidly, and especially in the case of opaque fluid and confusing particles, to search a part of the area minutely or make an additional dilution. Experienced examiners on an average give from two to three minutes to the examination of a specimen containing on an average four to five loopfuls spread over an area of approximately a square inch on the slide.

Infected stools, or positives, are usually detected in the first field or first run across the slide examined. In a test case of 550 positives of hookworm, most of them very light infections in Oklahoma and Texas recruits, detected on five consecutive days by five experienced examiners and recorded as found or not in the first run across the slide, there were 180, or 30.5 per cent., reported as seen in the first run. Infections obviously reduce the time required for examination in most cases. In a relatively few cases, estimated at not more than 5 per cent. in our experience with the examination of more than 100,000 men in the Southern Department (Texas, Oklahoma, New Mexico and Arizona), several ova only have been found in the whole slide examined. In rare instances only a single ovum is found. These very light infections and the negatives require more time for a complete examination than do other positives.

It is obvious that the rate of examination and daily score of the examiner will be in part a function of the ratio of positives to the whole and of the average degree of infection. With numerous positives and heavy infections, which are usually coincident, the rate of the expert examiner may easily be doubled over that when positives are few and infections are light. The experience, skill, industry and thoroughness of the examiner are also factors determining his daily score, as well as the nature of the stools as conditioned by diet and modified by the skill or lack of it on the part of the mixers.

A skilled examiner will complete from 150 to 250 examinations daily under average conditions. With the assistance of a looper the rate can be speeded up to one per minute; but the resulting eye strain renders this inadvisable as a daily routine. A staff of fifteen examiners can maintain a rate of from 2,000 to 2,500 examinations daily and attain 3,000 under favorable conditions of cooperation and effective supervision of the mixers. A staff of twenty examiners can complete a full regiment daily. Supplemental aid of approximately one man in the field collecting squad and one man in the laboratory and clerical squad for each examiner is necessary to collect, prepare, record and dispose of the specimens and attend to the policing of the laboratory.

The time required for the physician inexperienced in laboratory work to become efficient in this method is brief. Enlisted men with some experience in college, university or Army laboratories acquire a reliable degree of accuracy with several days' training and supervision, as shown by test, and may in some instances also acquire the speed of an experienced examiner in this time.

In our experience after experimenting with various methods of making records of the results of the examinations we have finally adopted the roster system with special recorders whose only duty is to make the record on the primary roster. Efforts to make a card system were futile, for even with experienced examiners, entries are sometimes omitted or incorrectly made. The difficulty arises from the constant intermittence of the two distinct types of work, microscopic and clerical.

For his own information and for the quick ascertainment of the day's totals and percentages, each examiner keeps a daily score on which is entered the serial number of each rack of specimens examined, the number of cans examined, negatives, hookworm, tapeworm, etc. The totals are quickly cast up, transferred to another sheet and the grand total arrived at.

The results of the examination of the individual cans are indicated by certain conventional signs. A negative can carries only the loop. Positive hookworm is indicated by the inserted slide, dwarf tapeworm (*Hymenolepis nana*) by a mixing stick, and any other infection by the written name on a slip of cardboard. When thus designated the rack is passed to the recorder's table who enters the results on the rosters, using red for hookworm, blue for all other infections, and lead pencil for negatives. Since the cans are arranged in numerical order within the racks, the entries on the roster fall consecutively in variously ordered groups of ten, and the recording proceeds rapidly. The arrangements of the cans in serial order and the entry of the results in sequence tend to eliminate errors arising from misplaced entries and indistinct numbers.

A rubber stamp is used to allocate on the roster a tabulated summary of the results within an organization such as a company or regiment. It provides for entries of infections by hookworm, *Hymenolepis nana*, a blank for writing in the rarer infections, negatives, no specimen, absent, number examined, and total on the roster. Additional spaces provide for revisions as follow-up specimens come in later.

This system reduces the clerical work to a minimum and makes possible the reporting in at the close of the day of the lists of the infected men for treatment. When the work of an organization is closed, the duplicate roster with all the infections and unexamined men indicated thereon is returned to the regimental surgeon and the triplicate similarly marked, to the division, district or camp sanitary inspector, and the primary roster remains as the permanent record for filing with the officer in charge of the hookworm survey.

The accuracy of this method depends on a number of variables, the size and consistence of the specimen, the thoroughness of stirring, the proper amount of steel wool, the care in looping, the opacity of the fluid, and the extent and thoroughness of search made of the material on the slide. Much depends on keeping the focus directly on the surface of the fluid during examination and in training the eye to detect quickly every object resembling an ovum.

The cases of infection which escape detection are the very light ones in which only a few ova can be found on a slide. Some slides prepared from such infections may have no ova, or the ova may be hidden or overlooked.

Reexamination of slides and cans that are reported by an experienced examiner as negative will sometives reveal a positive lightly infected. Men reported as negative on a first examination may appear as positive on a second specimen and vice versa. This raises the question as to the uniformity of distribution of the ova in the stool and as to the possibility of internal states of host and of parasite influencing the rate of deposition of ova in successive stools.

With a view of testing out the possibility of light infections having been overlooked, a test was made on 100 negatives from colored troops at Camp Travis. Infections in the battalions from whom these negatives were drawn were only sixty-eight in 1,495, or 4.8 per cent. The infections were also light, as a rule. The top fluid of fifty cans was drawn off into a tall cylindric liter graduate and the surface film of this column examined. The cans had stood after stirring for less than three hours, and no brine from thick or viscous stools was used, so as to avoid entangling any ova that might be present. This was repeated on a second fifty and the top fluid of the two lots combined in a slender 50 c.c. graduate. An examination of the surface film of each of these concentrations gave negative results. A subsequent examination within two hours of flotation of 150 negatives by the same method from white troops, showing 219 positives or 8.7 per cent. in 2,505 examinations, revealed one case of ova in one lot of fifty. The other two lots remained negative. In another test of three lots of fifty each from white and colored troops showing 110 infections, or 5.7 per cent., in 1,914 examinations, all remained negative. Thus, in a total of 400 negatives, or eight lots of fifty, of light and therefore presumably easily overlooked infections, only one lot showed evidence of an undetected infection on this test.

It appears from these tests that the number of positives escaping detection by the brine flotation-loop method is small. These tests were made in the negatives from sixteen examiners, eight of whom had had only from three to nine days' experience with hookworm examinations.

No opportunity has occurred for a comparison of this flotation method with the culture method to compare their relative accuracy on identical stools.

ADVANTAGES OF THE METHOD

The great advantage of the brine flotation-loop method lies primarily in the easy utilization of large samples. With large enough containers, receptacles for mixing the entire stool may be utilized, thus eliminating entirely the element of random sampling, except as this may appear in irregular ovoposition or unequal discharge in successive stools. This insures a sufficient number of ova to make detection possible in light infections which other methods, using smaller samples, may fail to detect in a larger proportion of examinations. The method is for this reason a more accurate one.

The method is also a simple one, requiring only the simplest laboratory equipment, aside from the microscope, using available commercial materials and utilizing unskilled labor in large part for its aids. This facilitates the mobility of field operations far from base laboratories, since a permanent staff only for supervision and training is necessary.

It is also more rapid, being in our experience about 50 per cent. more rapid than the centrifuge method. It is also more rapid than the culture method, in the experience of the senior author, since the time required in the mixing, inspection, watering, concentrating, examining the cultures and in cleaning the pipets and Syracuse dishes is easily double that consumed in the flotation method. This is increased if glass Petri dishes are used for culture instead of paraffined paper ones, which may be wasted.

The flotation method also almost wholly eliminates the labor of cleaning apparatus and containers. The only pieces of apparatus to be cleaned are the wire loops from negative cans which may be salved by washing en masse and drying thoroughly, the glass slides, which are rinsed and wiped, and the racks, which are occasionally washed with brush and hose. The container, which serves also as mixing can, the stick and the steel wool are wasted. There is no cover glass or centrifuge tube to be cleaned.

COST

With the exception of the microscope, the use of which is common to all methods, all apparatus and materials used are inexpensive commercial articles. Aside from the microscopes, tables and stools and office fittings, the equipment necessary for handling 2,500 daily costs about $120. The materials necessary for 1,000 examinations in addition to the containers are 1,000 sheets of buckskin paper, 10 by 15 inches, 500 tongue depressors, 35 pounds of salt, from 1 to 2 pounds of No. 0 steel wool, and a certain amount of wastage on loops and slides. The cost in the Army for the salaries and commutation of the officers and pay and subsistence of the men required to make 2,500 examinations daily in a given instance is 6.2 cents per examination, a total of 7.7 cents. There is also expense for office supplies, some clerical work in the preparation of rosters, and of fuel for incineration, which will increase this amount to about 8 cents per examination. Costs of transportation and other overhead charges not included above will also slightly increase this amount according to the varying circumstances attending the survey. If allowance is made for slack time and reductions in rate of supply of specimens incident to Army conditions, the cost will be materially increased. The estimates given are based on optimal conditions and full capacity.

Another advantage accruing from the simplicity of the method and the nature of the materials used lies in the fact that nontechnical labor may be utilized to a large degree, and competent persons accustomed to the use of the microscope may very quickly become efficient examiners. This renders its use on a large scale in military or industrial establishments or in preventive social sanitation both practicable and possible with a relatively small staff of specially trained persons for supervision and administration.

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PANDEMIC INFLUENZA AND PNEUMONIA IN A LARGE CIVIL HOSPITAL*

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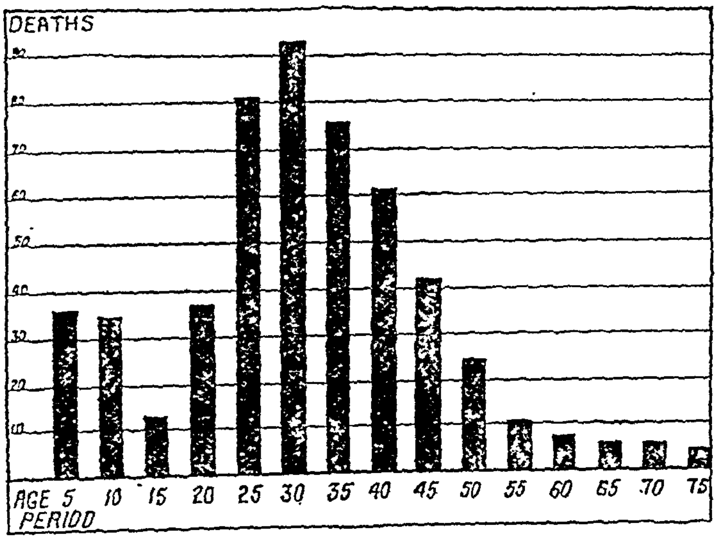
Following the reports of a rapidly spreading and highly fatal pandemic of influenza and pneumonia in the Eastern States, and while the epidemic of influenza was raging at the Great Lakes Naval Training Station, a severe outbreak of this disease appeared among the civil population of Chicago. During the past five weeks, from September 23 to October 29, more than 2,000 patients were admitted to the wards of Cook County Hospital. Of these, 642 died, a mortality of 31 per cent. In the accompanying chart, of the first 500 deaths, it will be noted that the age period of highest mortality falls between 25 and 30 years.

Among the total number of admissions during this period there were 122 soldiers, and thus far twenty-one cases have terminated fatally—a mortality of 16 per cent. So far as the admissions to a large charity institution, such as the Cook County Hospital, may be regarded as an index to the prevalence of the recent epidemic in Chicago, it appears that the disease is now definitely on the decline. Accordingly, it seems pertinent to report the results of an intensive study conducted during the past five weeks in the morgue and the laboratory of the Cook County Hospital.



Age period of highest mortality in the first 500 deaths. The ordinates represent the ages in five year periods, the abscissas the total number of deaths per period. It will be noted that the period of highest mortality is between 25 and 30 years.

CLINICAL PICTURE

The incubation period varied from a few hours to one or two days. Shortly after the arrival of the first fifty soldiers, five of the nurses in attendance on these patients became violently ill, and during the following two weeks more than fifty nurses and twelve of the resident physicians contracted the disease. Three of the nurses died. Blood cultures, nasopharyngeal and tonsil swabs and cultures of the washed bronchial secretion were immediately taken by the laboratory staff, and four of the laboratory assistants were suddenly taken ill within the next forty-eight hours.

The onset is sudden, with complaint of severe headache, dull, aching pains in the muscles and joints, general weakness and quite commonly dull pains in the lumbar region. Conjunctivitis is not infrequent in the initial stages. Sore throat is unusual. The patient takes to bed with chilly sensations, and the fever rises rapidly from 101 to 104 F. Early prostration is the rule. Epistaxis occurs in a considerable number of patients, in one person as much as a pint of bright red blood gushing from the nostrils. The pulse is accelerated and the respirations vary from 20 to 36 a minute. The second to the fourth day marks the critical period for the average patient. Remissions may occur, but among our cases more frequently following the crisis the temperature rises rapidly again and a slight bronchial cough develops, productive of small amounts of thick yellow or yellowish brown sputum teeming with gram-positive encapsulated pneumococci. There can be no doubt that the bronchial secretions are highly infectious at this time and that the disease is transmitted by personal contact and by droplet infection occasioned by coughing and sneezing.

Moreover, very early after the onset, careful physical examination of the patient's chest will often reveal scattered râles with areas of consolidation over the lower lobes and especially the right lower lobe. The bronchopneumonic process begins as an intense acute hemorrhagic tracheobronchitis, rapidly extending to the finer bronchioles of the lung. In the acute fulminating cases the patients become markedly cyanosed, and death results from an asphyxiative bronchiolitis with large quantities of frothy blood-tinged fluid exuding from the mouth and nostrils.

In the more protracted cases, particularly in civilian patients, the bronchopneumonia extends gradually to the left lower, and right middle and upper lobes, and clinical evidence of a severe toxemia manifests itself. Blood counts taken early after the onset of the initial symptoms exhibit a striking leukopenia as low as 1,800 per cubic millimeter, and averaging from 3,000 to 4,000 per cubic millimeter. With the onset of the pneumonia a definite leukocytosis quite commonly appears. The urine shows traces of albumin with hyaline and granular casts. Blood cultures taken early and late in the course of the disease and inoculated into glucose broth and plated in blood agar have remained uniformly sterile in forty-two instances.

MORBID ANATOMY

Of the first forty postmortem examinations made on the bodies of persons dying both early and late of bronchopneumonia, it was possible to obtain cultures from the nasopharynx, tonsils, washed selected bronchial sputum and from the lung parenchyma. Cultures were also obtained from these sites before death. The first eight necropsies were all of acute fulminating cases in young soldiers of excellent muscular development and physique. The course of the disease ranged from three to five days. Death was preceded by marked cyanosis and clinical evidence of acute asphyxiative bronchiolitis.

At necropsy the pleural cavities contained blood-tinged fluids remarkably free from fibrin content and varying from 300 to 1,000 c.c. in amount. The pleura of the lungs was fibrin free and regularly the seat of petechial and confluent hemorrhages. On cutting transversely across the trachea to reflect the viscera from the thoracic cavity, large quantities of blood-tinged, frothy fluid exuded from the air passages. The lining of the trachea and main bronchi presented a deep purplish red, and this intense inflammatory condition extended downward into the finest bronchioles. The consolidation was always lobular in type and involved most frequently the lower lobes, less often the entire midde and lower half of the right upper lobes. Marginal compensatory emphysema presented itself with striking regularity. The peribronchial lymph glands were acutely swollen and edematous. Cut surfaces of the lung presented a mottled, firm, granular appearance with intervening areas of dark red aerated lung tissue. Large quantities of bloody serum bathed the smooth, fibrin-free cut surfaces of the lung. The right heart was acutely dilated, in two instances the tricuspid valve ring measuring 13 and 14 cm., respectively, from cut edge to cut edge. In another body, bilateral symmetrical hemorrhage of rather huge dimensions was present in the tissues of the fatty capsules of both kidneys. The liver and kidneys were heavier than normal and the seat of fatty changes and parenchymatous degeneration. Passive hyperemia of the pia-arachnoidal vessels over the cerebral cortex, and edema of the leptomeninges were not uncommon. We desire to emphasize the fact that the amount of consolidated lung parenchyma was small as compared to the pneumonic consolidation quite regularly present in the more protracted cases among civilians. It will be noted that *B. influenzae* was isolated from only three of the lungs at necropsy in these eight early cases, in one instance in practically pure culture.

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* From the Laboratory of Pathology of the Cook County Hospital.

In the more protracted cases among civilians the bronchopneumonic process presents a rather uniform bluish gray hue with the cut surface bathed in grayish yellow pus—a massive, confluent, pseudolobar pneumonia. Fibrin is frequently present over the pleura of the lower lobes of the lungs. In only one case was an empyema present. The hemolytic streptococcus was isolated in pure culture and identified in direct smears from the pus.

BACTERIOLOGIC FINDINGS

A careful detailed bacteriologic study of the prevailing epidemic, especially among the civilian population, forms the basis of this paper. Bacteriologic reports of the pandemic in Europe show that the influenza bacillus was found only exceptionally while pneumococci, streptococci and *Micrococcus catarrhalis* were recovered with considerable regularity from the sputum, nose and throat cultures. In Germany a circular letter addressed to the leading bacteriologists requesting the results of their laboratory investigations brought forth the following replies[1]: "Pfeiffer had not examined a sufficient number of cases at Breslau, but found his bacillus in some while failing to recover it from others, and was still investigating the causes of this discrepancy." Gruber in Munich and Friedmann in Berlin failed to find the influenza bacillus, and report streptococci and pneumococci as the common agents of the complicating pneumonias. Kolle in Frankfort failed to find *B. influenzae* in any of the cases which he had thoroughly examined.

Among the English observers, Gotch and Wittingham[2] isolated *Micrococcus catarrhalis*, with which they claim to have produced the disease in man. Little, Garofalo and Williams[3] found a gram-positive coccus which they believe to be the etiologic agent of the disease. From the Eastern States Keegan[4] in Massachusetts and Park[5] in New York have isolated the influenza bacillus in a high percentage of cases. These reports concern soldiers and sailors chiefly. Our study was made principally of the civilian population.

During the present epidemic in Chicago, more than 3,000 blood agar plate cultures have been made from swabs of the nasopharynx, tonsils and washed selected bronchial sputum and from the viscera and body fluids at necropsy in search for the influenza bacillus or other micro-organisms of possible etiologic significance. Blood agar plate cultures were made from the swabs of the nasopharynx and tonsils in more than 100 patients approximately equally divided into early and late cases. The washed bronchial secretions from the same patients were both plated and streaked on the surface of blood agar plates. Control cultures from the nose and throats of normal individuals were also made. In both groups a peculiar gram-positive coccus growing in grayish white colonies and exhibiting marked pleomorphism in stained smears was present with considerable frequency. The smaller coccal bodies passed Mandler filters in two instances. This coccus was nonpathogenic both for man and the ordinary laboratory animals.

TABLE 1.—PERCENTAGE INCIDENCE OF VARIOUS BACTERIA ISOLATED FROM THE SPUTUM, NASOPHARYNX AND TONSILS IN 100 CASES OF INFLUENZA

	Pneumococcus %	B. Influenzae %	Streptococcus Hemolyticus %	Staphylococcus %	Micrococcus Catarrhalis %	B. Mucosus-Capsulatus %	Miscellaneous
Washed bronchial sputum..	70	4	20	40	6	1	Diphtheroids 1%
Nasopharynx	38	0	4	65	6	1	Leptothrix 2% Meningococcus 2% Diphtheroids 1%
Tonsil.....	74	0	37	37	7	1	Diphtheroids 1%

In Table 1 is shown the percentage incidence of the various organisms isolated from the nose, throat and sputum of 100 patients. The influenza bacillus was recovered in four cases from the washed sputum—in three instances in predominating cultures, but always in symbiosis with staphylococci. It was not present in the nose or throat swabs. The predominating organism was the pneumococcus isolated from the washed sputum in 70 per cent. and from the throat in 74 per cent. of the cases. *Streptococcus hemolyticus* occurred in the washed sputum in 20 per cent., or twenty patients.

To determine how early and with what frequency the various bacteria invade the lungs, a series of lung punctures was made both before and after clinical evidence of pneumonia presented itself. A sterile needle attached to a glass syringe was passed through the intercostal spaces into the lung parenchyma, and lung tissue plus serum was aspirated sufficient to streak the surfaces of blood agar plates at the bedside. In addition, some of the aspirated material was inoculated into poured blood agar plates in each instance. Of thirty-six consecutive lung punctures taken during life, twenty-one were sterile. Eleven yielded the results given in Table 2. Thus the pneumococcus was present in pure culture in 72.6 per cent.; hemolytic streptococcus in 19.8 per cent., and *Micrococcus catarrhalis* in 6.6 per cent.

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[1] Quoted from Bacteriology of the "Spanish Influenza," Lancet, London, 1918, **2**, 177.

[2] Gotch, O. H., and Wittingham, H. E.: Brit. Med. Jour., 1918, **2**, 82.

[3] Little, T. H.; Garofalo, C. J., and Williams, P. A.: Lancet, London, 1918, **2**, 34.

[4] Keegan, J. J.: The Prevailing Pandemic of Influenza, The Journal A. M. A., Sept. 28, 1918, p. 1051.

[5] Park, W. H.: New York Med. Jour., 1918, **108**, 621.

Table 3 gives the findings in cultures of the lung tissue streaked and plated on blood agar at necropsy. *B. influenzae* was isolated in three cases, or 8.7 per cent., in one instance in practically pure culture from both lungs. Again the predominating organism was the pneumococcus, occurring in 75 per cent. of the lungs at necropsy, from ten cases in pure culture, eleven times in predominating culture and in five instances in mixed culture. Of the various types of pneumococci recovered, Type II was present in 30.5 per cent. of the lungs, and Type IV in 50 per cent.

TABLE 2.—LUNG PUNCTURES DURING LIFE*

	No. of Cases	Per Cent.
Pneumococcus, Type I	1	6.6
Pneumococcus, Type II	2	13.2
Pneumococcus, Type III	3	19.8
Pneumococcus, Type IV	5	33.0
Hemolytic streptococcus	3	19.8
Micrococcus catarrhalis	1	6.6

* Incidence of the various bacteria isolated from fifteen lung punctures during life. Pneumococci predominated in pure culture in eleven cases, a total of 72.6 per cent.

TABLE 3.—LUNG CULTURES AT NECROPSY*

	No. of Cases	Per Cent.
Pneumococcus, Type I	2	7.6
Pneumococcus, Type II	8	30.5
Pneumococcus, Type III	3	11.5
Pneumococcus, Type IV	13	50.0
Influenza bacillus	3	8.7
Hemolytic streptococcus	15	43.0
Staphylococcus	18	40.0
Micrococcus catarrhalis	0	0.0

* Incidence of the various bacteria isolated from thirty-four lung cultures at necropsy. Pneumococci were recovered in pure culture in twenty-six patients, a total of 75 per cent.

TABLE 4.—NUMBER OF INSTANCES THE VARIOUS BACTERIA WERE ISOLATED FROM THE TISSUES AND BODY FLUIDS IN THE FIRST THIRTY-SIX NECROPSIES

	Pneumococcus	B. Influenzae	Streptococcus Hemolyticus	Micrococcus Catarrhalis	Staphylococcus
Heart's blood	7	0	8	0	0
Pleural fluid	15	0	8	0	2
Pericardial fluid	8	0	8	0	0
Tracheal mucosa	19	1	14	1	15
Lung	26	3	15	1	18
Spinal fluid	2	0	1	0	3
Peritoneal fluid	0	0	1	0	0
Middle ear	2	0	1	0	0
Frontal sinus	1	0	1	0	0
Spleen	0	0	3	0	4

The various strains of pneumococci were identified by morphology, cultural reactions, inulin fermenting properties, bile solubility and, finally, biologically with immune serums. Pneumococcus, Type IV, and allied green producing organisms were found to vary greatly both as regards bile solubility and inulin fermentation. Subsequent study of this heterogeneous group may extend it to include numerous strains of *Streptococcus viridans*. Hemolytic streptococci appear as late secondary invaders and were isolated from 43 per cent. of the lungs at necropsy. Staphylococci were frequently present.

THE INFLUENZA BACILLUS

It is evident from the tables that the influenza bacillus was isolated in only a relatively small percentage of the cases. Thus *B. influenzae* was present in four washed sputums—three times in predominating cultures growing typically as transparent minute colonies in symbiosis with staphylococci. It was recovered in one instance from the tracheal mucosa and three times from the lung cultures at necropsy. Influenza bacilli were never isolated from the lung punctures during life taken by preference from the early cases. On the other hand, the bacilli were recovered both in smears and in practically pure cultures from each lung in the case of a young soldier dying the fifth day of the disease. It appears that the Pfeiffer bacilli may have been the cause of the pneumonia in this case. In contrast to this single case we have not been able to isolate the bacillus in any considerable percentage of the civilian patients either during life or from acute fulminating cases at necropsy. The early results indicate that the technic employed should have sufficed to recover the organism if it were present in any considerable number of patients.

Furthermore, the high percentage of pneumococci obtained during life and at necropsy and predominating in the sputum, tracheal mucosa and lung tissue both early and late in the course of the disease suggest that this organism is at least the most important secondary invader and is responsible for many of the rapidly fatal pneumonias. It may be that we are dealing with a highly virulent strain of pneumococci sufficient in themselves to produce a rapidly fatal lobular pneumonia.

EXPERIMENTAL

Early in the course of our investigations we were impressed with the paucity of the bacteria in the nasopharynx at the onset of the disease and the marked degree of prostration exhibited in many of the patients. The possibility of a filtrable virus as the cause of the disease suggested the following experiments:

Experiment 1.—Oct. 2, 1918, the nose and throat of a patient having a typical case of influenza of forty-eight hours' duration was washed with 40 c.c. of sterile physiologic sodium chlorid solution, and the collected washings were diluted to a total bulk of 60 c.c. and shaken for twenty minutes in a sterile bottle containing glass beads. The fluid was immediately filtered through two small tested Mandler filters of medium porosity. The clear Filtrate A was inoculated into the anterior nares of three volunteers in amounts varying from 0.5 to 1 c.c. in each nostril. One of the men thus inoculated complained of slight headache, and presented a moderate conjunctivitis and a temperature of 99 F. twenty-four hours after the inoculation. These symptoms rapidly disappeared, and no further symptoms developed in any of the three subjects.

Experiment 2.—Oct. 4, 1918, the nasopharyngeal washings in two typical cases of influenza were mixed together and agitated in a sterile bottle containing glass beads for a period of fifteen minutes. The first patient had been ill only ten hours while the second patient was in the fifth day of the disease. The mixture of washings was immediately passed through a Mandler filter as Filtrate A and a second smaller portion filtered through a small Berkefeld candle N as Filtrate B. Filtrate A was inoculated into the anterior nares of two volunteers, and Filtrate B was similarly inoculated into the noses of two additional volunteers. One of the four subjects complained of a slight headache and presented himself twenty-four hours after the experiment with a definite coryza, conjunctivitis and lacrimation. These symptoms had completely disappeared by the following morning, and the men had all remained well when seen two weeks later. Cultures of the clear filtrates were inoculated into glucose broth and in the anaerobic tissue ascitic fluid culture medium of Noguchi. All tubes remained sterile after the expiration of two weeks. From these observations, which confirm those recently reported by Keegan, it may be assumed that the etiologic agent is not filtrable.

Experiment 3.—Oct. 4, 1918, at 4 p. m., the trachea and main bronchi secured at necropsy from a patient dying on the fifth day of the disease was split parallel to its lumen and the swollen dark red mucosa curetted off and thoroughly ground up with sterile sand in a mortar to make a turbid suspension in 50 c.c. of sterile saline solution. The suspension was centrifuged at slow speed to throw down the gross particles, and half of the resulting red emulsion was passed through a Mandler diatomaceous earth candle of 12 pounds positive pressure. A *Macacus rhesus* monkey received 5 c.c. of the unfiltered suspension in each nostril, and 20 c.c. of the clear filtrate were injected at the same time very slowly intravenously. No symptoms developed.

Experiment 4.—Oct. 8, 1918, the monkey received 2 c.c. of the mixture of the nasopharyngeal washings in four early cases of influenza in each nostril after previous swabbing and washing out the protective mucus in the nares. No symptoms developed after seven days' observation.

COMPLICATIONS AND SEQUELAE

During the past five weeks of the present epidemic there were eighty-six pregnant women admitted to the obstetric wards of the hospital affected with influenza or pneumonia. Of this number twenty-one died shortly after miscarriage. Twenty additional deaths occurred before miscarriage could result, and forty-five patients recovered with or without miscarriage. The total maternal mortality has been 45.5 per cent.

Among other complications of the disease, eleven patients have developed a unilateral or bilateral purulent otitis media. Pure cultures of pneumococci were isolated from eight discharging ears, the hemolytic streptococcus in two patients and the *Streptococcus viridans* in the remaining case. One child developed an acute and fatal mastoiditis. Purulent frontal sinusitis was encountered in one instance at necropsy, and cultures yielded pure hemolytic streptococci. It is to be expected that sequelae of still more diverse nature may subsequently develop.

SUMMARY

A severe and rapidly spreading epidemic of influenza and bronchopneumonia first appeared at the Cook County Hospital, September 23. During the past five weeks more than 2,000 patients were admitted to the hospital. The disease is highly contagious, and the mortality among our patients has totaled 31 per cent. The epidemic has seriously crippled the medical and more especially the nursing staff of the hospital. More than fifty of the nurses and twelve of the physicians have contracted the disease, three deaths occurring among the total number.

The influenza bacillus was isolated in only 8.7 per cent. of the total cases and chiefly from a small number of soldiers. In one instance it appears that the influenza bacillus may have caused the fatal bronchonpneumonia. Influenza bacilli were isolated only exceptionally from the civilian patients. Pneumococci were the predominating organisms in the sputum, throat cultures and in the lung cultures both during life and at necropsy. Pneumococci of unusual virulence were the most important early secondary invaders, and have sufficed to cause many of the fatal pneumonias.

Experiments indicate that the disease is apparently not due to a filtrable virus.

Liability for Performing Unauthorized Postmortem Examination.—It is held in the Minnesota case of *Woods* v. *Graham*, 167 N. W. 113, annotated in L. R. A. 1918 D, 403, to be no defense to an action to recover damages caused by a necropsy performed on the body of the daughter of plaintiff, without the consent of the next of kin, that defendant, as the attending physician, was unable to ascertain the cause of death and performed the necropsy for that purpose, so as to be able to give a certificate, as required by law, stating the cause of death.—*Legal Notes.*

INCORRECTNESS OF THE DIAGNOSIS OF DEATH FROM INFLUENZA

PRESENCE OF BRONCHOPNEUMONIA IN PRACTICALLY ALL PERSONS SEVERELY ILL WITH INFLUENZA *

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Boards of health, as indicated by newspaper reports, very generally are subdividing their mortality reports from epidemic influenza into deaths from influenza and deaths from pneumonia or bronchopneumonia. This is no doubt based on the death certificate return handed in by the physician in charge of the patient. Is it a correct return? In my opinion it is not. The correct return should be bronchopneumonia and (epidemic) influenza. Whether the bronchopneumonia is part of the influenza or is a complication of that disease; whether the disease is due primarily to the influenza bacillus; whether the pulmonary consolidation is caused primarily by the *Bacillus influenzae* or is the result of concomitant bacteria are questions that cannot be answered on the basis of our present information. However, my own observations on patients suffering from epidemic influenza do justify a vigorous protest against a statistical subdivision of death reports into those dying from influenza without pneumonia and those dying from bronchopneumonia or pneumonia and influenza.

My reasons for believing that in practically all fatal cases of epidemic influenza there is a pneumonic process in the lungs before death are as follows:

1. In 126 consecutive fatal cases of epidemic influenza observed by me and my assistants at the Peter Bent Brigham Hospital, not a single patient failed to show physical signs justifying a clinical antemortem diagnosis of bronchopneumonia.
2. In twenty-two consecutive necropsies at the Peter Bent Brigham Hospital in fatal cases of this group, no single case failed to show pathologic changes in the lung justifying the diagnosis on the part of the pathologist of bronchopneumonia.
3. In patients submitted to necropsy, pulmonary changes are as a rule more extensive than physical signs during life had indicated.
4. Clinical study of nonfatal cases of epidemic influenza justify the belief that with very few exceptions, patients with fairly severe to severe cases have bronchopneumonia.

In making the foregoing statements I do not deny that influenza patients may die from an overwhelming toxemia without pulmonary involvement or from influenzal meningitis or encephalitis or from some other manifestations of the disease. Such fatal cases did not occur at the Peter Bent Brigham Hospital, and in conversation with my colleagues who have had postmortem experience in this disease I have found that their views have seemed to coincide with those expressed here by me. In our admissions to the hospital of patients sent in with the diagnosis of influenza, I have seen cases of meningitis; one case was due to the meningococcus and apparently did not have any complicating influenza; two patients were tuberculous and may have had influenza, and two cases were due to the pneumococcus in influenza patients with pneumonia. Several patients with influenza and having signs and symptoms suggestive of meningitis showed spinal fluids with normal cell counts and negative cultures. No spinal fluids in our cases showed *B. influenzae*.

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* From the Medical Clinic of the Peter Bent Brigham Hospital.

The statement made under No. 4 is based on these facts. In 195 unselected cases[1] of epidemic influenza studied in the wards of the Peter Bent Brigham Hospital, 132 showed during their period of observation in the hospital sufficient physical signs to justify the clinical diagnosis of bronchopneumonia. The 132 include practically all severely ill patients and many who were only mildly ill. The only patients in whom the temperature was as high as 101 for more than three days in this series in which no diagnosis of bronchopneumonia was made were fourteen in number. Two of these had complicating otitis media, and one was an asthmatic with chronic bronchitis antedating influenza; eight were patients admitted on the day of their first symptoms, two on the third day of their disease, and one on the fourth day. Of these last eleven patients, none were more than mildly ill, and they appeared to be free of any complications.

The physical signs on which was based the diagnosis of bronchopneumonia were areas of bronchial breathing or consonating râles, usually both, frequently bronchophony and often dulness on percussion. The occurrence of any one of these signs in a localized area appears to justify the diagnosis of bronchopneumonia. In a number of our patients, roentgen-ray examinations were made and invariably showed evidence of consolidation where these physical signs had been observed. Moreover, the roentgen plate as a rule showed more extensive areas of consolidation than clinical signs indicated; and not infrequently it showed consolidation before we had felt justified in diagnosing it on the basis of physical signs. The peculiar snapping consonating quality of the râle in epidemic influenza seems of great significance as indicating consolidation. All who have been listening to the chest in influenza patients will, I am sure, recognize what I mean, though my word picture of the quality of the sound is very inadequate.

The early foci of consolidation in influenza are found almost invariably in the region of the angle of the scapula and the interscapular regions. Here the roentgen ray shows that consolidation begins, i. e., toward the inner lower border of the lung posteriorly rather than anteriorly. From such an early beginning, rapid spread often takes place, leading to very extensive diffuse consolidation and not infrequently giving the clinical picture of a lobar pneumonia, though I believe true lobar pneumonia is really rare in association with influenza.

If the busy clinician—and never were our medical men so overwhelmed with work as in this epidemic—will percuss rapidly the lower lobes in the back and listen in the region of the angle of the scapulae and next in the interscapular regions he will find quickly in most severe cases evidence justifying him in diagnosing bronchopneumonia. Of course, in many cases further examination will yield evidence of much more extensive pneumonic involvement.

I should not be justified in making the extreme statement that all patients with epidemic influenza have bronchopneumonia. Many milder cases certainly give no physical signs of consolidation, and the roentgen ray shows no shadow sufficient to justify the diagnosis of a focus of consolidation. I believe, however, that we are justified in regarding epidemic influenza as a disease involving the respiratory tract and except in the milder cases causing a clinically demonstrable bronchitis and bronchopneumonia in the larger proportion of cases. That as the severity and duration of the disease increases the percentage of patients with bronchopneumonia increases, and that in fatal cases almost without exception bronchopneumonia is present, are conclusions which seem fully justified by the data here presented. A corollary to this is that, in my opinion, it is quite incorrect to consider fatalities in this epidemic as due to influenza uncomplicated by bronchopneumonia except in such exceptional cases as to form a negligible factor in statistical reports of death returns.

AN EPIDEMIC OF INFLUENZA AT MANILA, P. I.*

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During the month of June, 1918, an epidemic of influenza appeared in the Philippine Islands which presented a number of interesting manifestations. At the time I was in charge of St. Luke's, one of the most popular hospitals in Manila, and will attempt to summarize my notes and records during that period. About 300 cases, the majority of which were hospital patients, came under direct observation.

The epidemic, so far as can be determined, began in Manila, although the fact that cases were first noted among longshoremen and other laborers along the waterfront might indicate that it had been brought in from some other part of the world. On the other hand, the statements of Castellani and Chalmers and others that pandemics of influenza have usually started in the Far East further the belief that this epidemic originated here. All of the reports and rumors of influenza occurring elsewhere—in other parts of the Philippine Archipelago, in Japan, Vladivostok, Spain, etc.—that have come to my attention have placed their outbreaks at later dates than the one at Manila, with one exception: Between thirty and forty cases of influenza, with at least one death, occurred on a United States Army transport which left San Francisco shortly before the epidemic appeared in Manila, and arrived here after it was practically over. The Filipino cabin-boys and mess attendants were the most seriously affected on board the transport, although several first-class passengers were also ill.

While the disease in the Manila epidemic affected all classes and races, it was most severe among the Filipinos, less so among the Chinese and Japanese, and still less among the Europeans and Americans. As there was no attempt at isolation, the infection spread rapidly. Within three days after the first cases were noticed, between 70 and 80 per cent. of the longshoremen, clerks and other workers at the docks were unable to work, with the result that several of the transpacific vessels were delayed in sailing. In two days more, the epidemic had reached the business and residence sections of the city. In one large business firm, 80 per cent. of the native employees were away from work for at least two days, while 50 per cent. of the Europeans were absent for one day. The majority of the business concerns were similarly incapacitated. Two of the newspapers were so crippled that publication was suspended for a day, and the telephone company asked the indulgence of the public for its poor service, explaining that 90 per cent. of its force was suffering from the epidemic.

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[1] This represents only those patients discharged and having their histories completed and filed in the record room to date. The total of our cases, about 500 in number, will show somewhat the same rates.

* The observations on which this note is based were made under the auspices of the International Health Board of the Rockefeller Foundation.

St. Luke's Hospital, with a normal capacity of seventy patients, accommodated between ninety and ninety-six for several days, the largest number admitted in its history. The work necessitated by this increase was accomplished with great difficulty, as one third of the nursing staff and one half of the orderlies and attendants were ill.

Within ten days after the initial outbreak the great majority of those who had been ill were well enough to be back at work, and business and industrial activities resumed their normal course. However, the hospital continued to be overcrowded with cases diagnosed as influenza for two or three weeks more, and it was not until the advent of a typhoon, which brought with it a great deal of wind and rain, that the last vestiges of the disease were swept away. During the epidemic there was no apparent decrease in the number of admissions to the hospital for other diseases.

Clinically, most of the cases ran the typical course of influenza as described in textbooks, namely, sharp onset, usually with sore throat or upper respiratory tract symptoms, sudden high fever, and headache, with aching and stiffness all over the body. A pronouncedly slow pulse rate, in proportion to the temperature, was remarked to be the rule. This slow pulse, and the absence of a skin rash, together with the lightning-like spread of the epidemic, served to differentiate the disease from dengue fever, the only closely similar condition. The highest temperature recorded was 106.2 F. The patient with this high fever did not suffer, however, nearly as much as many others, and it appeared that the severity of the attack did not depend on the temperature. The majority of the patients also withstood the pain very well, as is the usual thing among these peoples, but the toxemia developed was so great that it made those who were most severely stricken practically collapse. The faces of the patients as a whole, as one looked down the wards, were more miserable-looking during the days of the epidemic than at any other time in my experience.

Of the more unusual features of the disease, it may be mentioned that anorexia, nausea and vomiting were much more common than usual. In 8 per cent. of the hospital cases, repeated emesis was noted. One patient came to the hospital for hiccups which had commenced on the second day of the disease, and had persisted continuously for forty hours before admission. Hemorrhage from the mucous membranes was a fairly prominent feature. Epistaxis occurred in 1 per cent. of the cases, and coughing up of blood from the lower respiratory passages in 1.5 per cent. Two patients vomited fresh blood in small amounts, and four passed noticeable amounts of fairly fresh blood by rectum. There were neither hemorrhoids nor symptoms of dysentery in the latter cases, and there was no evidence of tuberculosis in the cases in which the hemoptysis occurred.

The patients were all given a routine course of treatment, consisting of calomel and santonin followed by Epsom salt or castor oil, quinin, and occasionally acetylsalicylic acid for headache.

The death rate for the patients admitted to the hospital was very high for this disease, 2 per cent. instead of the usual 0.4 to 0.6 per cent. As one would expect, the mortality rate in the hospital was higher than in the city at large, although thirty-one deaths were reported to the bureau of health during the short period of the epidemic.

All of the patients dying in the hospital developed symptoms of pneumonia, and in one case in which a necropsy was performed, a large very foul-smelling abscess was found in the upper left lobe, while the lower left lobe was in the stage of red hepatization.

There is no question in the minds of the clinicians of Manila that this epidemic was influenza or the grip, but the following personal communication from Dr. J. W. Johnson, M. R. C., U. S. Army, shows that the causative agent was undoubtedly *Bacillus influenzae* of Pfeiffer:

> The organism found was small, about 0.5 micron in length by 0.3 micron in width, and had rounded ends. Staining with Loeffler's methylene blue gave best results, allowing the stain to act for not less than five minutes. The organism was gram-negative, and staining by this method had a tendency to be irregular. Blood agar (human blood) or agar streaked with fresh human blood gave best results as a culture medium. Small portions of sputum were picked up with sterile forceps, washed in sterile distilled water, and rubbed over blood agar plates or slants, and these were incubated at 37.5 C. Colonies appeared in about twenty-four hours as very minute transparent droplets, like dew drops, and gave the appearance of frosted glass. Cultures soon died out, and it was found that transplanting every two or three days was necessary. Even then, after three or four subcultures, growth ceased. The organism was recovered from the very first patients who clinically developed the disease. Cultures from the blood remained sterile.

CONCLUSION

An epidemic of the severe or epidemic type of influenza occurred in the Philippines in June, 1918, apparently spontaneous in origin. It was of more than usual severity, especially among the native peoples, and affected a larger proportion of the whole population than is the rule. Although at present we have no definite information that the epidemic has spread farther than to southern Japan, it is easy to imagine that this may be the beginning of another pandemic of the disease. It is highly desirable, therefore, that epidemics in other localities in the near future be promptly recognized and reported, so that the direction of travel and rapidity of dissemination of the disease may be learned. Should a pandemic be approaching the battle fronts, every effort will be necessary to prevent it from actually reaching and playing havoc in the Allied armies.

Complement Fixation Test for Syphilis.—In *Public Health Reports*, Aug. 23, 1918, M. H. Neill of the Public Health Service describes the method of performing the complement fixation test for syphilis as now used in the Hygienic Laboratory of the United States Public Health Service. It is a modification of the Wassermann test and the description is full and complete, with a list of the apparatus and reagents required.

THE MORPHOLOGY OF THE INFLUENZA BACILLUS *

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Pfeiffer[1] described a "true influenza" bacillus and a "pseudo-influenza bacillus." He was unable to distinguish these organisms in direct smears of exudates, where they both appeared as small bacilli with rounded ends. Culturally they were identical. He based his distinction on the fact that smears from cultures of the true influenza bacillus showed small bacilli with few longer forms, while smears made from cultures of the pseudo-influenza bacillus showed long, threadlike organisms. The pseudo-influenza bacillus was isolated by Pfeiffer from three cases of bronchopneumonia.

In bacteriologic examinations of the sputum, blood and lungs during the present epidemic of influenza, both forms of the influenza bacillus have been encountered. In some cases aerobic plates of the sputum have yielded practically pure cultures of the small gram-negative bacillus contaminated only by rare colonies of staphylococcus. Sputum from other cases has yielded equally pure cultures of the long, threadlike organism designated by Pfeiffer as pseudo-influenza bacillus.

This long, threadlike form appeared in the blood culture of a patient whose sputum contained the same type of organism. Aerobic plate cultures of the pneumonic area in a lung showed a pure culture of an organism which at the end of twenty-four hours' growth appeared in smears as a very small, gram-negative bacillus, and at the end of forty-eight hours, as long, wavy or curled, gram-negative threads which would ordinarily be classed as a leptothrix. In every case direct smears of the sputum showed only the small, bacillary form.

These findings suggested that however unlike the two forms appeared in smears made from cultures, there was a possibility that they were the same organism.

In order to determine if the reaction of the medium influenced the morphology of the organism, medium was prepared by adding human blood to a series of tubes containing agar which, after sterilization, titrated 1.5, 1.0, 0.4, 0.2 acid, neutral, 0.2, and 0.7 alkaline expressed in percentages of normal sodium hydroxid with phenolphthalein as an indicator. Seven sets of these tubes were inoculated with different strains of organisms. Four of the strains used were small bacilli, such as Pfeiffer termed true influenza. Three were the threadlike forms which he considered pseudo-influenza bacilli. Smears were made from the tubes at the end of twenty-four and forty-eight hours.

The three strains that resembled leptothrix in the original cultures still showed the long threads in the more acid medium, but on the 0.2 acid and neutral tubes they grew as small bacilli which could not be distinguished from true influenza bacilli. The four strains that grew in the original cultures as small bacilli showed transitions from the longer, sometimes threadlike forms on the more acid medium to the small bacillary forms on the slightly acid and neutral tubes.

Kato[2] reported a gram-negative leptothrix which he believed to be the cause of pleuropneumonia. In a bacteriologic study of the pneumonia occurring at Camp Pike last winter, Dick[3] found leptothrix organisms predominating on plates of the sputum in 6 per cent. of the cases. He described them as "very minute colonies, barely visible to the naked eye, but extremely numerous. There was no effect on blood. The organisms were gram-negative and varied in length from organisms resembling influenza bacilli, to long, slightly wavy organisms extending half way across the field. It was not possible to cultivate these organisms beyond one or two subcultures, and their importance is undetermined."

Where there is such variation in morphology in different cultures of the same strain, it does not seem justifiable to classify influenza bacilli as true and pseudo on the basis of morphology alone. In attempting to isolate influenza bacilli, it is important to recognize the leptothrix-like form as well as the small bacillary form.

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* From the laboratory of St. Luke's Hospital.

[1] Pfeiffer: Ztschr. f. Hyg., 1893, **13**, 356.

[2] Kato: Mitt. a. d. Med. Fakt. d. k. Univ. zu *Tokyo*, 1915, **13**, 441.

[3] Dick, G. F.: A Bacteriologic Study of the *Pneumonia* Occurring at Camp Pike, Ark., The *Journal* A. M. A., May 23, 1918, p. 152

NOTES ON THE PRESENT EPIDEMIC OF RESPIRATORY DISEASE *

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From September 20 to October 31, we saw both in our services at the Michael Reese Hospital and in private practice approximately 500 cases of epidemic respiratory disease. The various forms of onset will easily fall into three groups: the first characterized by symptoms of a more or less severe coryza, the second by varying degrees of prostration, backache, headache, chilly sensations and elevated temperature, and the third by a feeling of indefinite discomfort, with no fever, but in a few hours a definite rise of temperature. Careful examination at the beginning of the disease, in all cases, usually revealed few signs, except for a slight reddening of the anterior pillars of the pharynx, and in many instances an intense congestion of the conjunctivae. Many patients who were coughing violently showed no signs of bronchial involvement, the cough probably being due to an intense congestion of the trachea. However, in a large percentage of our cases, careful examination at the onset showed a more or less circumscribed area, sometimes no larger than the bell of a stethoscope, which would manifest râles or dulness or changes in the breath sounds. It is our opinion that all these cases should be considered pneumonia, as a large percentage of this type does not show the drop to normal in three or four days.

DANGER OF PULMONARY SIGNS

One of the most important lessons learned from the epidemic is the potential danger residing in these small pulmonary signs, even when the temperature is normal. In several of our cases, a very slight pulmonary condition, after careless exposure to cold, developed into severe pneumonia. The development of pneumonic symptoms in these patients occurred either (*1*) after a complete defervescence, following on the footsteps of a more or less severe febrile period, lasting from one to two days; (2) after a drop in temperature, but not to normal, or (3) without a reduction, but instead with an elevation of the temperature on the third or fourth day. In any one of these three forms, the physical signs of bronchopneumonia would be present at the beginning of this phase of the disease, or would appear within a day or two. It is our opinion that the persistence or appearance of a rise in temperature on the third day indicates bronchopneumonia.

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* From the Medical Service of the Michael Reese Hospital.

The appearance of the patient early in the disease does not betray his condition. Aside from the conjunctivitis and mild pharyngitis, already mentioned, the patient does not appear ill. Later, however, with the advance in the pneumonic process and an increase in the toxemia, cyanosis, sometimes with more or less edema of the face, becomes prominent. Stupor, restlessness and delirium may appear. At times, the uncanny combination of absence of the radial pulse, profuse perspiration and cyanosis, with the patient in full possession of his mental faculties, indicates only too clearly the fatal termination. The low pulse rate, which has been so characteristic of the disease, is a definite sign. Patients seen early with a pulse rate above 100 always evoke a suspicion of some other disease, although occasionally an increased pulse rate may have been caused by too large doses of acetylsalicylic acid. Late in the disease, with an increase in the severity of the condition, a rapid pulse rate is present. One rather striking feature was the inverted type of temperature. Many of our patients would be normal except at 4 or 8 a. m. The combination of the slow pulse, with this inverted type of temperature, sometimes made the diagnosis of influenza, when otherwise the diagnosis would have been difficult to establish.

Perhaps the most common site of the pneumonic disturbance was in the left lower lung, posteriorly, although no portion of the lung was particularly exempt, and no particular site had any special prognostic value. The type of pulmonary pathologic condition varied clinically from the small patch, which ordinarily would be considered merely a bronchitis, to a large massive pneumonia, with general edema of both lungs, and expectoration of bright red blood.

RESPIRATORY RATE

The respiratory rate early was as a rule slow, even though the temperature and pulse rate were increased. The appearance of an increased respiratory rate, from 40 to 50, indicated not only an increase in pulmonary involvement, but what seemed of more significance, an increase in toxemia. At times a definite air hunger, suggestive of a severe acidosis, made its appearance. From our experience, we have come to look on an increased respiratory rate, even though the temperature and pulse did not become elevated, as of more unfavorable significance than almost any other sign. On the contrary, when the temperature was high and the respiratory rate low, the condition was not considered unfavorable.

COUGH AND EXPECTORATION

Cough was a prominent and troublesome symptom in the majority of cases. Generally unproductive at the onset, later it became painful and accompanied by nummular expectoration and abdominal pain, probably muscular, from the strain of coughing. Where bloody expectoration occurred, the cough was not so frequently accompanied by pain.

PLEURITIC PAIN

Actual pleuritic pain, either thoracic or referred abdominal, occurred in a small percentage of cases. In these cases a pleuritic friction rub could be heard. Fluid in the chest, either serofibrinous, bloody or purulent, occurred, more frequently later in the epidemic than at the beginning. The removal of the fluid except in cases of empyema even in small amounts, by exploratory thoracentesis, seems to be followed by definitely favorable changes in the course. Involvement of the accessory sinuses of the nose is probably very common, and a routine examination ought to be established to rule this out. Ear infections, which were so common in the epidemic of 1891, were comparatively rare at the beginning of the epidemic, but apparently are becoming more prominent as late sequelae.

BLOOD PRESSURE

There was a normal or slightly diminished systolic blood pressure in those patients in whom the disease ran a moderate course. The diastolic pressure, however, was considerably lower than was to be expected. A systolic pressure of 100, with a diastolic pressure of 40, was a not uncommon occurrence. When the diastolic pressure was high or comparatively high, some cause was to be found, as a nephritis. One patient whose systolic pressure was 120, diastolic 85, with Cheyne-Stokes breathing during her pneumonic phase, had a systolic pressure of 180, and diastolic of 115 on recovery from the pneumonia. In no case, except when an organic heart lesion had previously existed, was there found a dilated right heart indicative of cardiac failure.

MENSTRUATION

In the women practically all menstruated between the first and third day of the disease, and many of these patients had considerable menstrual difficulty in the period following the disease. It is too early yet to speak definitely on this subject. Many women had considerable difficulty in urination at the beginning of the disease. Anuria of from twelve to twenty hours was not uncommon, so that catheterization had to be resorted to on account of a large urinary bladder tumor. Albumin and casts were found frequently in the later stages of the disease. Intense headache, rigidity of the neck and back, with spinal fluid under high pressure, suggested meningitis. However, cytologic and chemical study of the spinal fluid yielded negative results. The patient made an uneventful recovery.

Although one hears considerable of gastro-intestinal influenza, the large majority of the patients do not have gastro-intestinal symptoms, except when they are severely ill, when nausea, vomiting, and complete anorexia may set in. Many patients, however, complained of intense abdominal pain, which was apparently due to a muscular disturbance from the violent coughing. In the later stages of the epidemic, and likewise perhaps two or three weeks before the epidemic reached Chicago, we saw a number of cases of acute gastro-enteritis which may or may not have been associated with the epidemic. In many instances, the clinical picture was similar except for the location of the disease.

BACTERIOLOGIC FINDINGS

The accompanying table (1) shows clearly the incidence of positive bacterial findings. Positive blood cultures were without prognostic significance. A leukopenia was the rule, except when an empyema developed. In these cases, a leukocytosis from 10,000 to 18,000 obtained.

We had a number of cases complicating other diseases, and strangely enough these patients were apparently no worse off than others. We had three cases complicated by bronchial asthma, one with a massive pneumonia, and another in which the patient was not so severely ill; all made uneventful recoveries. At least one case, and perhaps more, occurred on top of an old pulmonary tuberculosis. Several patients had organic heart disease, and none of these died. Two cases complicated chronic nephritis; one patient made uneventful recovery and one died.

PERCENTAGE OF TIMES BACTERIA WERE PRESENT IN EXAMINATIONS *

	Number of Examinations	B. Influenzae	Streptococci			Pneumococcus	M. Catarrhalis	Friedlaender's Bacillus	Diphtheroids	Staphylococcus
			S. Viridans							
			Typical S. Viridans	Narrow Zone of Hemolysis after 24 Hrs.	Streptococcus Hemolyticus					
Sputum......	13	8	46	80	8	23	0	8	0	100
Throat......	125	12	20	70	10	64	17	13	12	80
Nose........	22	0	10	5	0	18	0	0	0	91
Pleural exudate.......	8	0	12	38	0	25	0	0	0	0
Blood cultures.......	105	...	17	18						
Total......	273	5.5	20	41	4.4	32	8	7	4	46

* This table was kindly prepared by Dr. Katherine Howell, who will later make a detailed report of her studies.

PREGNANCY AS A COMPLICATION

Perhaps the saddest feature of the whole epidemic was the effect on pregnant women or women with very young children. These cases were unquestionably the most severe in our experience, and many of these patients died. At present it is impossible to collect our statistics. These patients very early became markedly cyanotic, dyspneic, had rapid pulse, and massive (often hemorrhagic) pneumonia, and many of them from the first day of the illness gave an absolutely unfavorable prognosis. One patient in particular, a healthy young woman with two children, seen early in the epidemic, was moribund in twenty-four hours from the onset.

CLINICAL COURSE

The clinical course ranged from a few days to two weeks of acute symptoms. The distressing feature in many cases was that when the patient seemed to be progressing favorably toward an uneventful recovery, suddenly like lightning from a clear sky he would develop an increasing cyanosis, high temperature, high pulse and respiratory rate, a severe toxemia and pass away in from twelve to thirty-six hours. Relapses did not occur, although in two instances that came to our notice, patients died one week later from what appeared to be pulmonary embolism.

Convalescence was often very greatly prolonged, so that at times two or three weeks were required before the patient felt well enough to be up and about.

PROGNOSIS

No disease has ever been encountered in which it was more difficult to outline a prognosis. Patients, apparently mildly ill, suddenly on the third or fourth day would show a high temperature, cyanosis, rapid respiration and pneumonic consolidation, and would rapidly get worse. On the other hand, quite a number of our cases, especially those seen in the hospital, with cyanosis, lobar pneumonia and extremely toxic symptoms, pulled through to uneventful recoveries, without any special line of treatment. All the cases that were not complicated by pneumonia offer an absolutely good prognosis, but we had to be extremely cautious in all the pneumonic cases. Some factors which we considered of importance for prognosis are immediate taking to bed and keeping warm, with plenty of fresh air in the room and proper bedside care. By proper bedside care we mean absolute bed rest, the patient not being allowed to leave his bed for any purpose whatsoever. In several apparently mild cases pneumonia developed when the patient got up too soon, and it is our opinion that a certain percentage of the mortality from the epidemic might be prevented. Some patients die, no matter how excellent the care they obtain; but such a large proportion of the deaths occurred in patients apparently well who suddenly develop pneumonia, after exposure, that the impression of cause and effect is very definitely produced.

MORTALITY

The hospital statistics for the month of October show 269 admissions of all types, including moribund pneumonia patients. Of this number, forty-seven, or 17 per cent., died, but eleven of the forty-seven were in the hospital less than twenty-four hours, reducing the mortality to 13.4 per cent. From the hospital personnel of approximately 400 there were 107 admissions, of whom three, or 2.8 per cent., died.

TREATMENT

Prophylactic vaccination is as yet of unknown value. We know of at least three instances in which three doses of a vaccine had been given and influenza subsequently developed, and of over twenty instances in which one or two doses had been given, followed later by typical attacks of influenza and pneumonia.

We feel definitely that at present there is no special treatment. The two of us, working on independent services, gradually evolved an identical plan of practically leaving the patient alone and treating symptoms as they arose. We have used acetylsalicylic acid, 10 grains, or powder of ipecac and opium (Dover's powder) 10 grains, or both, with hot alkaline drinks and purgation for the first two days; then if there were any evidences of pneumonia, medication was removed and the patient treated purely for his symptoms. Heroin or morphin were found to be the best sedatives for the violent coughing and to keep the patient in comfort. We found that the administration of large quantities of fluids of all kinds by mouth, and when not retained, by rectum, either as plain tap water or with the addition of glucose, in 5 per cent. solution, and of urging the patient to take as much food as possible, with plenty of fresh air and warm coverings, were the most important factors in the treatment.

Early in the epidemic, we found that the administration of expectorants, salicylates, hexamethylenamin, quinin, etc., were of little value. Hexamethylenamin seems definitely contraindicated because of its tendency to produce hematuria. Cardiac stimulants, as digitalis, caffein and sodium benzoate, by mouth or hypodermically, were used, but with questionable value. Camphor in oil, pituitary solution in 7 minim doses, epinephrin in physiologic sodium chlorid solution by hypodermoclysis, and atropin in 1/60 to 1/100 grain doses, especially when an edema of the lungs was imminent, did not seem to alter the course of the disease. Whisky, brandy and aromatic spirit of ammonia were all used, but except for a temporary stimulation seemed useless. Champagne served in teaspoonful doses, with ice pellets, was sometimes the only thing the severely ill patients could tolerate without nausea. Oxygen by inhalation relieved the cyanosis, but had no effect on the course.

Convalescent serum (400 c.c.) was administered in one case, without preventing a fatal termination.

CONTAGIOUSNESS

A word as to the element of contagion. All of the interns who became ill had been in close contact with the patients, and many of the nurses who attended influenza patients subsequently became patients themselves, despite the fact that they took precautions to wear face masks while on duty taking care of patients, and to wash their hands in antiseptic solutions before leaving their patients. The air in one of the wards, on culture, yielded the hemolytic streptococcus.

CONCLUSIONS

1. The present epidemic of "influenza" or "influenzal bronchopneumonia" or "epidemic pneumonia" is as yet of unknown etiology.
2. The course of the disease, apparently mild at first, is treacherous, and not associated with any symptoms that might indicate the intensity or the severity.
3. In our hands no specific treatment seemed to have greater value than the induction of symptomatic relief, which we believe should be the hub of the treatment.

TWO CASES OF HUMAN ANTHRAX AT CAMP JACKSON [*]

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Anthrax, a disease of relatively rare occurrence in civil life in this country, has assumed a certain degree of importance because of scattered cases that have appeared in Army camps. A few cases have occurred in camps in this country, and in the British army the cases have been more numerous. Usually it is possible to trace the infection to contaminated shaving brushes. The occurrence of two cases in Camp Jackson within a very short period of each other, the first reported from this camp, appears worthy of record, especially in view of the fact that the first case was so atypical clinically that the nature of the condition could not be suspected without the laboratory findings.

REPORTS OF CASES

Case 1.—*Clinical Course.*—A private of the One Hundred and Fifty-Sixth Depot Brigade, white, aged 23, was admitted to the base hospital, July 17, 1918. The family and previous history were negative. July 14, while shaving, he noticed a small pimple on the neck. He squeezed out a small amount of fluid; the lesion began to swell and grew worse from this time. By July 16 the swelling had extended well down on the chest. On admission both sides of the neck were swollen, the swelling extending downward on the chest to 1 inch below the nipple line. There was a small abrasion on the left side of the neck anteriorly. The pulse was weak, the skin was somewhat cyanosed, and respiration was sighing in character. The temperature on admission was 97.2, the pulse 124, respiration 26. The white blood cells numbered 16,500, of which 78 per cent. were neutrophils, 2 per cent. basophils, 13 per cent. small mononuclears, 5 per cent. large mononuclears, and 2 per cent. transitionals. The diagnosis made at this time was cellulitis of the neck. The patient's condition rapidly became worse. At 3 p. m. of the day of admission the swollen tissue was incised and drained, the incision consisting of a 4 inch median longitudinal incision, with a 4 inch subclavicular incision at each side. No pus was present. The incised tissue was edematous. Smears and cultures were made from the fluid that exuded from the incision. A blood culture was taken on the evening of the day of admission; the blood at this time was very thick and dark and coagulated quickly. When the dressing was changed at 3:30 a. m. of the next day a large amount of serum was present, and the swelling of the chest had decreased slightly. The patient appeared very ill. Examination of the cultures made from the incision and of the blood culture showed the presence of *B. anthracis*. At 9 a. m., July 18, the dressing was changed again, a large amount of serum being present. The patient failed rapidly and died at noon, July 18.

Necropsy.—This was done four hours after death. In the region of the upper chest was an open crucial incision that extended through the skin and soft parts to the underlying bone. The longitudinal limb of the incision extended from the sternal notch to the middle region of the sternum. The horizontal limb extended from the middle of the left clavicle to the middle of the right clavicle. The margins of the incision were retracted, and the exposed tissue was found to be covered by a thin layer of grayish white material. Slightly to the left of the midline of the neck and 5 cm. above the clavicular line was an oval superficial skin lesion, 0.5 by 1 cm., covered with a dark crust. The neck was swollen, the swelling extending laterally on each side to the line of the mastoid region. The skin of the swollen region was slightly reddened and felt boggy. The cervical glands were not palpable. In the inferior chest region, below the lower end of the longitudinal incision, the subcutaneous tissue was edematous and gelatinous. The loose tissue of the upper anterior mediastinum was edematous. The spleen was increased in size to about four times the normal. The capsule was tense, free of adhesions, and bluish. The tissue on section was dark red and moderately firm. The malpighian bodies stood out as grayish translucent points up to 1 mm. in diameter.

Microscopic Examination.—In sections from the edematous subcutaneous tissue of the chest, the collagen fibers were swollen, fibrillated and granular, and the tissue spaces were filled with granular, eosin stained, structureless material in which a fibrin meshwork was present. The tissue was richly infiltrated with polymorphonuclear leukocytes, and contained many large gram-positive bacilli, which often formed long threads. In the underlying muscle, some fibers were swollen and faintly stained, and others were compressed and hyaline; most of the fibers had lost their cross striations. Sections of organs and tissues other than the subcutaneous tissue contained a few scattered, large, gram-positive bacilli in the capillaries. In the subcutaneous tissue the bacilli were numerous.

Bacteriologic Examinations.—Cultures from the small local lesion of the neck and from the fluid of the incision, made at the time of operation, gave a pure culture of a gram-positive, nonmotile bacillus, morphologically *B. anthracis*. A blood culture made on the evening of the day before death gave a pure culture of the same organism; 0.1 c.c. of this culture inoculated subcutaneously into a white mouse caused the death of the latter in twelve hours, and from the heart's blood of the mouse *B. anthracis* was again isolated. Smears from the spleen and liver at necropsy showed the same organism obtained in culture. Cultures from the spleen gave a heavy growth of *B. anthracis.*

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[*] From the laboratory of the Base Hospital, Camp Jackson, Marshall A. Barber, Captain, S. C., U. S. Army, Chief of Laboratory.

Diagnosis.—The findings in the case may be thus summarized: anthrax of the skin; generalized anthrax bacteremia; gelatinous subcutaneous edema of neck and chest; surgical incision of upper thorax; acute splenic tumor; passive congestion of the liver; cloudy swelling of the liver and kidneys.

Cultures were made of the shaving brush, shaving soap and razor strop used by the soldier, but *B. anthracis* was not isolated.

CASE 2.—*Clinical Course.*—A private of the One Hundred and Fifty-Sixth Depot Brigade, aged 26, white, was admitted to the base hospital, July 27, 1918, with swelling and edema of the right side of the face and neck. He arrived at camp with a group of drafted men, July 27, at 1:30 a. m., having come from Dayton, Ohio. He gave a history of having shaved at Dayton with a new shaving brush, July 24. He noticed a small, pimple-like lesion of the center of the right cheek a day or so later. When admitted there was a black necrotic area one-eighth inch in diameter at the center of the right cheek, surrounded by a red ring with a few broken vesicles. The whole cheek from the eye to the side of the neck was edematous. The supraclavicular glands were enlarged and tender. The temperature on admission was 101, going to 103 at 6 p. m. of the same day. The patient appeared only moderately ill. A diagnosis of probable anthrax was made by Major James S. Stone, chief of the surgical service.

Smears and cultures from the lesion and a blood culture were made immediately after admission. Clear serum in large amounts exuded from the inflamed tissue about the escharotic center. The smears showed the presence of a large, gram-positive, encapsulated bacillus, morphologically *B. anthracis.* From the cultures of the local lesion, *B. anthracis* was obtained. The blood culture showed no growth during the first twenty-four hours, but at the end of a second twenty-four hour period of incubation *B. anthracis* had developed. This material inoculated into a white mouse killed the animal within twenty-four hours, and from the heart's blood of the mouse, *B. anthracis* was again isolated.

Treatment and Result.—At 4 p. m. of the day of admission, 50 c.c. of antistreptococcic serum were given intravenously. The entire treatment was conservative. The lesion was not excised or incised, but was kept covered with a moist Epsom salt dressing. On the day after admission the evening temperature rose to 103.1. The swelling of the face had increased, the right eye was closed, but the general condition was good. On the second day after admission (July 29) the edema of the face had begun to decrease and the patient felt well; the maximum temperature (evening) was 101.2. By July 31 the swelling had decreased to such a degree that the right eye was open, and the temperature and pulse had returned to normal, remaining normal throughout the rest of the course of the disease. Later notes found in the clinical record are: August 4, "Condition good. Pustule cleaning." August 11, "Depression in right cheek, about size of a quarter, looks fine; granulations forming. Swelling subsiding." The further course was uneventful. The blood examination at different times gave:

	Red Blood Cells	White Blood Cells	Hemoglobin	Polymorphonuclears	Small Mononuclears	Large Mononuclears
Aug. 1	4,060,000	10,000	90%	76%	22%	2%
Aug. 2	4,060,000	10,200	....	78%	19%	3%
Aug. 16	5,300,000	4,000	95%	72%	25%	3%

Cultures were made of the shaving brush, a new one used for the first time, July 24, and not used again thereafter, but *B. anthracis* was not isolated.

Two other cases, proved by laboratory examination to be not anthrax, are of interest because they were clinically so much like anthrax that this was the probable clinical diagnosis on admission. In each case the local lesion was noticed while the patient was shaving or a day thereafter.

In the first of these two cases, in which the patient was admitted a few days after the first patient with anthrax there was a reddened area on the anterior portion of the left cheek, and the entire cheek was markedly swollen. Smears and cultures showed the presence of streptococcus. Surgical incision opened a small collection of pus deep in the cheek. Recovery was rapid and uneventful.

The second patient was admitted two weeks after the second patient with anthrax. On the right side of the chin there was a dark, dry, escharotic lesion 0.5 cm. in diameter, surrounded by a red ring, on which were a number of small, superficial vesicles from which much clear serum exuded. The surrounding skin was swollen and hard. The lesion had the appearance of a typical malignant pustule. There were no constitutional symptoms. Smears and cultures made at repeated intervals on the day of admission and on the succeeding day revealed only *Staphylococcus albus.* By the second day the lesion had lost its anthrax-like character and had taken on that of a simple abscess. The further course was that of a staphylococcus abscess, and the lesion healed rapidly without incision.

COMMENT

The cases here reported add two more to the number of cases of anthrax that have occurred in Army camps in this country. In each case the development of the initial lesion bore a relationship to the use of a new shaving brush. Although *B. anthracis* was not isolated from either brush, perhaps because the brushes had been well washed after use, it is probable that the infection in each case was derived from a contaminated brush. Because of the danger of infection by brushes made from the hairs of animals dead of anthrax, the sale of such brushes should be prohibited. Attempts have been made in this laboratory to sterilize shaving brushes on sale at the exchanges in this camp, but the various methods tried result in the destruction of a large part of the brushes, especially the cheaper kind, which are most to blame.

SUMMARY

Two cases of anthrax have recently occurred at Camp Jackson. In each case the infection was probably due to the use of a contaminated shaving brush.

One case was atypical clinically and ended fatally. In the other, which was clinically a typical case of malignant pustule, the patient recovered. In each case *B. anthracis* was obtained in blood culture.

Two other cases simulated very closely the malignant pustule form of anthrax, but were proved by bacteriologic examination to be due to pyogenic cocci.

Every suspicious lesion of the face should be examined early for *B. anthracis,* and the examination should be repeated if negative.

The sale of all shaving brushes in which there is a possibility that the hairs of animals dead of anthrax have been used should be prohibited.

Exclusion of Pylorus by Rubber Band.—A. L. Soresi passes an ordinary rubber band around the pylorus by a thread attached to one end of the cut band. The band is drawn up tight to ligate the pylorus, and the ends are tied with silk or linen thread and are then cut off close. The rubber band is the ordinary office kind, about 3 cm. in diameter and 0.5 cm. wide. The gentle persistent pressure from the band prevents the plyorus from getting a chance to open, and its power of contraction is thus gradually completely lost. The compressed portion becomes anemic, and the tissue on each side of the anemic strip hypertrophies. With any other method of occlusion, as the compressed strip atrophies, the compression grows less, and the pylorus gets a chance to contract. This cannot occur under the continuous elastic pressure which keeps up the same no matter how much the tissues beneath atrophy. His method was illustrated in the *Clinica Chirurgica,* 1917, 25, 386.

INFLUENZA

ABSTRACTS OF FOREIGN LITERATURE COMPILED BY BRITISH MEDICAL RESEARCH COMMITTEE

[Note.—The following abstract on influenza is taken from the Medical Supplement compiled by the Medical Research Committee of Great Britain and issued by the General Staff under date of October 1. It apparently covers all the important recent literature on this subject, and especially German literature, which is not now available in this country.—Ed.]

In spite of the fact that influenza recurs in modern times every twenty to thirty years in explosive waves spreading through whole continents, and that twenty-seven years have elapsed since the last pandemic, there has been neither an intelligent anticipation of the event nor certainty as to the true nature of the gigantic outbreak when it appeared a few months ago.

Responsible authors lamented the coming of a new "Spanish" disease, oblivious of history, which records epidemics of "Spanish catarrhs" as far back as the sixteenth century. Incredible as it may seem, the convenient hypothesis of "collective food poisoning" was not lost sight of. In fact, one cannot but agree with Bergmann of Marburg, who remarks that the present epidemic would not be typical if typical mistakes were not committed again this year. "The meteorologists try again to ascertain the course of the epidemic, the English again recommend quinin as a panacea, and a new erroneous teaching seeks to explain the progress and intensity of the disease (in Germany) by malnourishment, although it does not spare better stocked countries. The epidemic has always adapted itself to the rapidity of the human means of communication. In Turkestan it spreads with the rapidity of a caravan, in Europe with that of an express train, in the wide world with that of an ocean liner, and today perhaps with the speed of a Rumpel-Taube or a Fokker."

The symptomatology is held by certain authors to differ from the pandemic of 1890-1892 in certain respects, as, for example, in that acute nasal catarrh was conspicuous by its absence this year. This raises the fundamental question as to the concept of influenza. Is it the clinical picture down to the least significant symptom or the epidemiologic characters of outbreak and course of spread which make of "influenza" an entity?

EPIDEMIOLOGY

Epidemiologically the extreme contagiousness of the disease was proved to be due to its aerial convection, namely, by means of the "drop infection" from person to person, and not by transportation of the virus through the air at large, through winds, etc.

Thus in July this year in a German field regiment the first battalion to be attacked was that which fought at close quarters with a—presumably infected—American detachment. During a temporary lull companies of the other battalions fell victim to the infection in order as they were sent to relieve one another in a tunnel which was the scene of the fighting. The infection is always bound up with the diseased individual.

HISTORICAL

This infection one was taught since 1892 to regard as being identical with the hemophilic *B. influenzae* discovered by R. Pfeiffer during a secondary recrudescent wave of the last pandemic. It has often been isolated in the interval from sporadic cases or limited outbreaks of nasobronchial affections giving a picture of "grip." It was found, as a rule, in the sputum or the nasal discharge, though records of recoveries from various serous cavities, etc., are also scattered through the bacteriologic literature of all countries. Although Pfeiffer's bacillus was found to be practically nonpathogenic to animals and proved to be a very unreliable antigen, yet its regular plentiful presence in the lungs in fatal cases of bronchopneumonia during the secondary epidemics of 1892-1893, and its obvious intimate connection with characteristic pathologic processes earned for it an unassailable position as a classical specific virus. Modern bacteriology identified the bacillus with influenza, and thus the orthodox concept of this disease resolved itself into the belief that there was no influenza in the absence of Pfeiffer's bacillus. With the final disappearance of all the after-epidemics of the 1890 decade, the findings of the Pfeiffer bacillus became less frequent, yet Europe was not free from widespread localized outbreaks of influenza-like diseases. Wassermann sought to explain this phenomenon by the assumption that the population of Europe had become immunized after the prolonged prevalence of influenza, and that consequently the bacilli tended quickly to disappear from the sputum and to elude cultural recovery. However, as time went on and the bacteriologic technic increased in perfection, various organisms other than *B. influenzae* were being discovered as their several etiologic agents with as much evidence as there was for the acceptance of the Pfeiffer bacillus. In fact, if an organism was recovered from the majority of cases, if it was present in tissues in undoubted connection with the lesions, if the character of growth made of it an "unusual" host, if it was cultivated from the blood of the patients, and if it induced a serologic response on the part of patients and convalescents, there were no grounds—in modern bacteriologic reasoning—to doubt its association with the epidemic. The Pfeiffer school stuck, however, to its guns, and maintained that the various non-Pfeiffer epidemics were not a true influenza. These, in their reasoning, were all members of a large group of "endemic grip" characterized by coryza, and were similar to ancient affections well described by the authors of the seventies and eighties prior to the last pandemic. Yet, the argument continued, when the pandemic broke out, the same authors acknowledged its essential difference from the previously prevalent "contagious catarrhs," and recognized it as a disease completely new in their experience. One need not quote extracts, for, indeed, the European medical literature of the last two months abounds in statements of an identical nature! The Pfeiffer school further insisted on epidemiologic dissimilarities, and argued that Pfeiffer's bacillus was the cause of the real pandemic disease, while the multiform catarrhal outbreaks, the "endemic grip," were indeed caused by a whole museum of bacteria mainly belonging to the coccal group. This was the argument developed by Scheller, a prominent pupil of Pfeiffer, in August, 1917, when Stephan described *Diplococcus mucosus* as the agent of a clinically typical "endemic" of influenza which broke out in December, 1916, in Strümpell's clinic at Leipzig. The diplococcus was isolated from the sputum and the blood of the patients, it was specifically agglutinated by an immune serum as well as by patients' and convalescents' serum. Not unlike the meningococcus, it differed from it in that it produced a capsule in the body and mucus on some mediums that it grew on ordinary agar and at 20 C., as well as by its variable retention of Gram's staining. Nonpathogenic to animals, it could not be identified with *Streptococcus mucosus* of Schottmüller; insoluble in bile, it was not identical with the group of pneumococci, particularly the *Pneumococcus mucosus* of the American authors. Fermenting maltose, glucose, levulose and galactose, it differed from the *Micrococcus catarrhalis* group. Its immune rabbit serum differentiated it easily from both the *Diplococcus crassus* and *flavus*.

Lingelsheim promptly acknowledged the organism as one described by him some years previously during his studies on the meningococci, but Scheller, who examined Stephan's cultures, could not confirm its variable behavior to Gram, and pronounced it frankly gram-positive. It is worth mentioning that in Strümpell's clinic the influenzal infection produced by the *Diplococcus mucosus-Leipzig*, as it was designated by Stephan, was held to have been a true septicemia, and that hemorrhagic nephritis was a frequent complication, while in some cases there was distinct meningism. This last finding is of some interest, for Stephan recovered a somewhat similar organism from the cerebrospinal fluid in an epidemic investigated by him in 1916 in a fever hospital in northern France. It was found, on the whole, not to possess a marked virulence.

BRITISH EPIDEMIC OF 1915

The Leipzig epidemic was not an isolated instance of a European influenzal disturbance. Shera early in 1917 gave an account of an influenzal epidemic of the spring of 1915 in London and the southern counties, in which he claimed to have occasionally isolated a bacillus similar to *B. influenzae*, but it is somewhat difficult to identify it from the scanty details given. Lenz drew attention to very frequent occurrence of pneumonias in 1915 in German prisoners' camps. Coincidently with both the epidemics observed by Stephan, catarrhs and bronchitic infections localized in the bronchioles appear to have been very prevalent in December, 1916, and January, 1917, in military hospitals in France and also at home. The *British Medical Journal* drew attention to their extent in a special article, stating generally that their bacteriologic character was rather undecided, though a coccal (mainly pneumococcal) nature was assumed. The infections were stated to have run an acute course. At about the same period, in the late winter of 1917, a "grippal" outbreak visited Vienna and lower Austria, but *B. influenzae* was not found, because Economo (*Medical Supplement*, 1918, **1**, 220), in his account of encephalitis lethargica, insists in his differential diagnosis on this fact. Von Wiesner (*Medical Supplement*, ibid.), describing the diplococcus which, he claimed, had caused the epidemic of encephalitis, emphasized the frequent findings on postmortem examinations of that period of lesions indicative of hemorrhagic diathesis, produced, in his opinion, by the "diplococcus of encephalitis." It may be noted that this organism was held to behave variably toward gram-staining, to have been pleomorphic, and insoluble in bile. The pleomorphic diplococcus discovered and described by Rosenow and his collaborators in America at the time of the 1916 and 1917 epidemics of poliomyelitis falls undoubtedly into the same group of organisms. Incidentally it may be added that bronchopneumonias were often found to have been the determining cause of death in both the Viennese and the American outbreaks of poliencephalomyelitis.

EPIDEMICS IN 1917

The winter of 1917 was indeed pregnant with unusual diseases, for very fatal infections of purulent bronchitis were recorded at the base hospitals in France. Hammond, Rolland and Shore gave an exquisite account of their bacteriologic and pathologic characters. Gram-negative coccobacilli identified as Pfeiffer's bacillus, nonvirulent to animals, assuming coccoid forms when degenerating, were obtained from the sputums in a proportion of eighteen out of thirty; they were grown on trypsin-broth-legume-agar, and the authors, one may assume, were satisfied as to their true hemophilic nature. Pathologically, there was marked purulent bronchitis, the smallest bronchi being filled up with pus, and in some cases secondary bronchopneumonias developed. Pleurisies and empyemas were a feature, while there was also general evidence of a toxemia in the organs and the heart muscle. Signs of a right-side heart failure were frequent.

Having subsided during the summer, the epidemic seems to have broken loose again last autumn, and Hallows, Eyre and French reported very fully on an epidemic of pneumonia at the Aldershot command in September, 1917. Purulent bronchiolitis, identical with that of Hammond, Rolland and Shore, was found, and both typical *B. influenzae* (Pfeiffer) and the pneumococcus were recovered from the sputums of the organs, though *B. influenzae* was not obtained in any large proportion of cases.

INFECTIVE ENCEPHALITIS

The late winter and spring of this year witnessed the epidemic of infective encephalitis in this country, while isolated outbreaks of virulent pneumonias seem also to have been observed. At one of the London hospitals (unpublished observation) a diplococcus identical with that of Rosenow was obtained in several cases of encephalitis and frequently found in the routine examination of throat swabs. "During the first week of May of this year an acute febrile disease with symptoms resembling those of influenza invaded three factories and one industrial home for boys in Glasgow," to quote MacLean. "The bacillus of influenza was invariably absent. . . . A gram-negative diplococcus resembling the pneumococcus has frequently been obtained from the nose, throat, lungs and membranes of the brain." A few months ago Rosenow found streptococci in an outbreak of "grip" in Chicago.

Thus it is clear that in the three years 1915 to 1917 diplococci were the predominating organisms associated with influenza-like infections, although it is difficult to pronounce as to the identity of the several strains described. Hemorrhagic lesions seem to have been induced by two types. The bacillus of Pfeiffer had been found but occasionally. This was in keeping with the orthodox teaching which claimed that only a new pandemic of true influenza could finally decide, and would convince the disbelievers, as to the real specific nature of the organism. The results of the work of the last three months, however, have belied these expectations.

The two leading London medical weeklies contain to date seven original contributions to the elucidation of this crucial problem.

BRITISH LITERATURE

Little, Garofalo and Williams flatly deny that the pandemic is a true influenza. For, first, no relapses or complications were observed by them in France; secondly, in the twenty cases examined by them, there was very slight leukocytosis with a proportional lymphocytosis of a small mononuclear variety, and lastly, as in all the twenty cases, a very small gram-positive diplococcus was of "universal predominance." It was absent from the two blood cultures that were undertaken. It was recovered from nasopharyngeal and throat swabs and from the sputum. Morphologically it was flattened out on apposing sides. It appeared sometimes in pure culture. Grown on legumin-serum agar, it developed in small transparent granular streptococcal-like colonies. It showed a slight tendency to anaerobic growth, fermented no sugars and was nonpathogenic to animals.

The reported absence of *B. influenzae* would sound more convincing if the elementary precaution of planting out sputums on blood agar had been adhered to.

Burnford characterized the outbreak as an acute fever accompanied by a general polyadenitis with no specific "germs" discoverable to account for the condition.

Gotch and Whittingham examined carefully fifty cases. Leukopenia with a neutrophilia at the height of fever, accompanied by a slow pulse, were pathologic features observed. In 8 per cent. of the throat swabs and sputums, *B. influenzae* was found. In the remaining cases there was constantly present a gram-negative diplococcus not unlike *M. catarrhalis*, while in 10 per cent. of cases there was also a coccus similar to the meningococcus. The fairly large predominant diplococcus was also recovered from the blood, and its cultures proved pathogenic to man in the two instances in which the disease was experimentally transmitted by means of its cultures. The organism, if properly investigated, might be found related to the larger group of cocci previously dealt with.

On the same date Krumbhaar related in a letter the results of his study in a "small group of cases," from three quarters of the number of which a short, moderately slender, gram-negative bacillus tending to form groups and growing in typical, small watery colonies on blood agar was recovered and identified as *B. influenzae* on the ground of the foregoing characteristics. It was added that according to verbal communications from France, Pfeiffer's bacillus was being isolated from sputums.

Matthews, who examined in London "about a dozen typical cases," ascertained in every one of them by means of the West postnasal swab planted on the author's trypsinized broth-blood agar the presence of *B. influenzae* "as a rule typical, but not infrequently in enormously long filaments." On ordinary blood agar the strains recovered their typical appearance, while on the author's medium they grew in large-sized colonies, 3 mm. broad, translucent, of hemispherical shape, brownish tinged with a regularly circular outline. No more precise details are given.

Averill, Young and Griffiths had under their care 1,439 patients, of whom sixteen developed lobar pneumonias with seven fatal issues. No account is given of postmortem examinations. Forty-three cases were examined bacteriologically. *B. influenzae* was not detected in the nasopharynx, a gram-positive diplococcus being predominant. The sputum of forty-one patients showed in thirty-two cases the presence of the same diplococcus associated with a gram-negative bacillus often in clumps. In nine other instances the diplococcus retained the field to itself. Grown on ordinary agar the sputums yielded colonies of the diplococcus only, while on blood agar discrete, transparent, smooth, rounded-edged colonies developed in addition. On prolonged counterstaining of the culture smears with 5 per cent. carbolfüchsin (ten minutes), small gram-negative coccobacilli with rounded ends, slightly bipolar and slightly larger than in the direct films were detected. They refused to grow on ordinary agar, fermented no sugars, and were, therefore, identified as Pfeiffer's bacillus, while the coccus was diagnosed as a pneumococcus.

Both these conclusions require further evidence, as the description of the coccobacilli fits in rather with the characters of Bordet's *B. pertussis* than of the classical bacillus of Pfeiffer, while no reasons are given for the assumption of a pneumococcal nature of the diplococcus.

Finally, Maude, who observed 2,067 cases, of which 248 were hospital admissions with three deaths, insists on the high percentage of patients who developed the complex lung conditions previously described by Hallows, Eyre and French. No systematic bacteriologic examinations were made by the author, who relies on the definition given in September, 1917, by Eyre of a double successive infection by *B. influenzae* and the pneumococcus.

Thus—on a summary—*B. influenzae* was doubtfully reported in some, undoubtedly present in other groups of cases, while two types of cocci were predominant in the hands of the remaining authors. Unfortunately the material actually dealt with so far was not sufficient in quantity to warrant the responsibility of drawing therefrom any general conclusions.

GERMAN LITERATURE

In Germany the widespread outbreak of influenza aroused a considerable and immediate scientific interest; the medical societies of Berlin and Munich held special meetings early in July, at which the identity of the prevalent disease with the last pandemic was recognized by a majority of the authorities after detailed discussions. This recognition was made all the easier as organs preserved since 1890-1892 were found on comparison with those obtained from fresh fatal cases to exhibit corresponding lesions, Lubarsch and Hansemann particularly insisting on the essential similarity.

The morbid anatomy of the present pandemic was studied in detail by a number of authors. Thus:

Oberndorfer investigated a large series of postmortem examinations in Munich (number not stated: apparently thirty-one).

Lubarsch reports on fourteen postmortem examinations from Berlin.

Schmorl reports on fifty postmortem examinations from Dresden.

Bernhardt and Meyer report on twenty-eight postmortem examinations from Stettin.

Simmonds reports on twenty-eight postmortem examinations from Hamburg.

Hirschbruch reports on sixteen postmortem examinations from Metz.

Dietrich reports on seven postmortem examinations from a field laboratory.

Bergmann (Marburg), Selter (Königsberg) and Gruber and Schädel (Mainz), a few each.

Oberndorfer's, Schmorl's and Lubarsch's descriptions may be taken as a standard, the other authors generally finding themselves in agreement with them.

Oberndorfer examined only very acute cases of the first fortnight of the epidemic. These were all men, mainly between the ages of 17 and 25. The lesions of the respiratory organs were so typical that the author could almost dictate seriatim identical protocols.

SYMPTOMS AND PATHOLOGY

In the initial stage of the affection of the lungs, namely, when only small foci without any great reaction in the immediate neighborhood are observed, the most striking findings were small, bean-sized hemorrhages projecting into the lung tissue. As a next step there followed a firmer infiltration of the parenchyma, the nodules sitting subpleurally and raising the pleura in consequence. A whole scale of intermediate formations lay between these small nodules and large hemorrhagic tuberous infiltrations; all possible gradations were observed from simple blood extravasations into the lung tissue, still containing air, to firm, almost dry, infarct-like hemorrhages of a bluish-black tinge. These extensive infiltrations were of the same shape as the usual pulmonary hemorrhagic infarcts, namely, they had the form of a wedge with its base resting on the pleura, thus clearly indicating an intimate relationship with the vascular system of the lungs. In this purely hemorrhagic initial stage no thrombi were ever found in these arteries, the extravasation of red cells being obviously due to an abnormal permeability of certain portions of the arterial system.

The second stage was characterized by exudative pneumonic processes combined with hemorrhages. The picture varied considerably at times. There may be a true croupous hepatization of lobular, or even lobar, extent, both red and gray, though the tinge was usually brownish and not as a rule very distinct. These pneumonic infiltrations usually embraced in their center circumscribed hemorrhages. The surface on section was not dry, being covered by a slimy, dirty coating, thus resembling a picture of Friedlaender's pneumonia. The pneumonic foci were sometimes flattened out at the ends into yellowish white wedge-shaped strictures corresponding to anemic infarcts both in form and color. These often became the seat of gangrene or suppuration, the pleura also being obviously involved in the process. In the majority of cases it was a catarrhal and desquamative succulent infiltration rather than a fibrinous exudation, but almost always severely complicated by suppuration.

The bronchi were filled with pus already in the first stage, the smaller branches containing thin fluid, though at times dried-up exudates formed firm plugs occluding the lumen of the bronchioli. This purulent bronchitis had as its consequence an extensive bronchiectasis with the bronchi distended cylindrically. The bronchi and their blood vessels were often surrounded by purulent infiltrations originating from the lymphatic system. In other cases, again, there were seen on section enormous numbers of minute abscesses surrounded by hemorrhages, the suppuration being obviously hematogenic in origin. These minute abscesses often became confluent, thus ending up by the formation of large caverns of pus.

The pleura participated in the process. The first signs consisted in punctiform hemorrhages, or ecchymoses; serous exudations followed next, and, as often as not, empyemas completed the picture. As a rule, one side only was affected. Pericarditis was a natural consequence of pleuritis. There were no gross changes in the heart save for some thickening of the arteries of the lung hilum. Occasionally incipient endocarditis was encountered.

The larynx and the upper third of the trachea showed no involvement in the process. The lower portion, however, was the seat of an intense mucopurulent exudation, which in many cases assumed a fibrinous character, with the consequent formation of extensive pseudomembranes in the lower trachea and down into the bronchi. Sometimes edema of the epiglottis was observed.

A striking feature was presented by the hyperplastic condition of the lymphatic apparatus of the tongue and the tracheal ring. The thymus was well preserved, the cervical and axillary, but not the inguinal, glands were enlarged. On the whole, an impression of the existence of a status thymolymphaticus was conveyed. As young individuals were mainly affected, these two facts may stand in a relation of cause and effect.

The spleen was enlarged, sometimes a septic spleen tumor being found.

The liver was but seldom involved; the kidneys showed a general hyperemic condition. In the brain and the meninges there was a marked vasodilatation, but no meningitis was noted. Punctiform hemorrhages, in the form of a purpura hemorrhagica, were met with in the corpus ammonis and the cerebellum.

The histologic examination revealed the following unusual findings: in the trachea, an intense exudation of fibrin in the deep layers of the mucosa, and a progressive inflammation of the deeper portions of the tracheal walls; in the lymphatic glands, an enormous vasodilatation, hemorrhages, as well as proliferation of the endothelium, particularly in the axillary glands.

The foci of inflammation in the lungs showed a leukocytic infiltration around the alveoli, bronchi, and the walls of small arteries. It did not involve the whole vessels, which were dotted with isolated spots of infiltration. There were also hemorrhages into the heart valves, with a consequent displacement of the fibers and damage to the endothelium; thus no definite endocarditis, but lesions, which facilitated the development of a secondary mycotic endocarditis. There were, therefore, signs of a lesion of the walls of the vessels, which were particularly marked in two cases in the arteria pulmonalis. A very advanced mycotic arteritis was detected here, exhibiting a leukocytic infiltration of the whole wall, particularly of the innermost layers, with displacement of elastic fibers and a necrotic fibrinous coating on the partly necrosed intima. The gram-staining revealed the presence of masses of streptococci, though there was no indication in these cases of a lymphangitis. Thus the whole character of the lesion, and particularly the localization of the most intense process on the internal wall, points to a primary affection of the intima.

PATHOLOGIC PICTURE

The essence of the whole pathologic picture consists, therefore, in the abundance of hemorrhages seen in the mucous and serous membranes, in the respiratory tract, and in the lungs, which indicated a damaged condition of the capillary vascular system. The abscesses, save for those originating in the bronchi, were also of a hematogenic nature. The whole process seems to be primarily a bacteremia localized in particular in the pulmonary blood vessels. Hemorrhages in the lungs pave the way for a secondary infection, the results of which dominate the whole field in the later stages. In any case the wedgelike shape of the pulmonary foci indicated a vascular origin of the lesions. From a purely anatomic point of view the condition bears many points of resemblance with pneumonic plague, though there is no indication as to an entry of the virus through definite lymphatic channels. The primary bacteremic condition was not found to be due to *B. influenzae* (Pfeiffer), and thus the invading virus remained undiscovered.

Lubarsch found essentially similar lesions in his fourteen cases. The age and sex incidence was the same, all being men, six of them under 20, five between 27 and 29, and only three over 30 (30, 33, 42). They were particularly well-built and well-nourished individuals. The author lays more stress than Oberndorfer on the pseudomembranous condition of the lower trachea and the bronchi, which sometimes attained the intensity of a true diphtheritic inflammation in the sense of Virchow, one could almost say of a necrosing inflammation. The changes in the lungs are particularly characterized by the tendency to spread over the pleura in an extraordinarily quick time, so much so that a genuine necrosis of the pleura is sometimes seen. In some cases the pleuritic lesions constitute the main damage, and death is caused by the consequent compression of the lungs. The essentially hemorrhagic character of the pulmonary processes is shown by the fact that in the rare cases in which the naked eye appearance gives no ground to suspect hemorrhages these are revealed by microscopic examination. Blood extravasations were also found in the mucous membranes of the stomach, the intestines and in the pelvis of the kidneys.

B. influenzae was found only once, namely, by microscopic examination of a section of the lungs. Streptococci were usually recovered from the blood, the lungs or the spleen. It is these organisms which caused death, not through generalized infection, but by producing fatal local lesions. Pfeiffer's bacillus, should it ultimately be found to be the primary cause of the pandemic, is not in any case a virulent agent, its exclusive multiplication in the body leading only very occasionally to a fatal issue.

Schmorl's fifty patients again corresponded in age incidence with the previous series. The ages of forty-seven ranged between 11 and 27, the remaining five consisting of two aged 48, two 36, and one 70. They were all persons in vigorous health. While in general agreement with the previous authors, he was particularly impressed by the diphtheritic inflammation of the trachea and bronchi, which he examined very carefully in sections, and found streptococci and pneumococci, occasionally staphylococci, associated with it, but neither *B. influenzae* nor *B. diphtheriae*. This condition is, in his opinion, very rare in influenza, but forms a strikingly common feature of the present epidemic; if diligently looked for, it will not be missed in many cases. A waxy degeneration of muscles, particularly the rectus abdominis, was encountered, as an indication of a central toxic influence.

But the most interesting finding of Schmorl is the frequent occurrence of hemorrhagic encephalitis. During the 1890 pandemic Schmorl made 120 postmortem examinations at Leipzig without recording this condition once. This year out of forty-four cases in which the central nervous system was examined, it was present in fifteen. The white substance of the cortex and both the gray and white of the central ganglions abounded in punctiform hemorrhages, the posterior part of the corpus callosum being most affected. The cerebellum, pons and medulla oblongata, as well as the parenchyma, are only occasionally involved. In some cases the thalamus opticus alone shows the lesions. Histologically, the few sections made so far show circular hemorrhages with a necrotic center situated around small vessels, while the periphery of the necrosis is surrounded by agglomerations of large cells, which also embrace the extravasated blood corpuscles. In other cases there is but a simple destruction of the substance of the brain by the extruded red cells. There were no pronounced inflammatory lesions. Of the seven brains examined bacteriologically, in two very small diplococci were found, which grew on blood agar like *B. influenzae*. The author questions, however, their etiologic significance. In spite of some disparity in pathologic findings, the author considers the infection to be real influenza, but he rejects Pfeiffer's bacillus as its cause, since it was found in the bronchial mucus in only three out of his fifty cases.

The other authors add few important observations. Simmonds maintains that the only difference as against the 1890 pandemic consists in the more frequent occurrence of secondary streptococcic infection. Bacteriologically he found *B. influenzae* in both the sputum and the postmortem material, "very frequently." Hirschbruch found *B. influenzae* in one case, the remaining fifteen being associated with cocci. Gruber and Schädel insist on the frequency of periarteritis and panarteritis, and note an acute dilatation of the right heart in most cases, a finding identical with that of Hammond, Rolland and Shore (see above). Diplostreptococci were the only bacteria found by them. Bergmann never found Pfeiffer's bacillus in postmortem material.

The observations made by Dietrich in the field deserve special mention. *B. influenzae* was recovered from the first seven postmortem examinations and identified as such by Neisser. They were found during the acme of the process in the alveoli, between the leukocytes or under the epithelium, or again in small mucous plugs occluding the bronchioli; there were none or very few in a multitude of other species in the trachea. The more advanced the lesions the more complex their bacterial form. In his opinion, Pfeiffer's bacillus was the "pioneer" of the lesions, while the secondary infections proved fatal. He denies the occurrence of a *status thymo-*

lymphaticus and believes that the exertions of the service, wounds, etc., prepared a disposition in his cases. Hemorrhagic diathesis of the tissues and very frequent findings of streptococcic meningitis and endocarditis differentiate his results from that of the other authors. He also agrees with the assumption of a primary affection of the vessels, but it is *B. influenzae* which in his opinion inflicts the damage, being also responsible for the edematous purulent bronchitis and thus forming a favorable basis for the subsequently fatal secondary infections.

Bernhardt and Meyer divide their twenty-eight cases into three categories: (*a*) Six severe hospital cases in which there were other affections and which were secondarily infected with influenza; (*b*) seven mild hospital or outside cases weakened by the previous illness; and (*c*) fifteen healthy individuals or surgical patients who were admitted to hospital for influenza. In this way the authors claim to have been able to watch the progressive development of the pathologic process, which in no way differs from that described by Oberndorfer. The inflammation of the intima in pulmonary arteries was noticed in one case. Encephalitis was present once, but it was a purulent hemorrhagic inflammation. Perichondritis arytenoidea and hemorrhages into, and swelling of, the suprarenals were among occasional findings. On the whole the process was localized almost entirely in the lungs and in the pleura in conformity with the experience of the 1890-1892 pandemic. *B. influenzae* was found in no instance, the majority of the cases yielding a pure growth of diplostreptococci which were obtained from the lungs, the heart blood, spleen and liver. It is difficult to decide whether all the strains belong to the same species. They tend to degenerate in involution forms; the virulence for mice varies from strain to strain and from culture to culture, to the extent of 0.001 c.c. to 0.1 c.c. of a broth culture by intraperitoneal injection. There may be, however, a relative unity of species in view of the contagiousness of all the strains and the explosive character of their transmissibility in a given group of patients (a hospital ward, barracks, etc.). The organisms must be regarded as companions of the unknown primary agent of the pandemic, the epidemiologic and pathologic symbiosis being regulated by definite biologic laws. In any case the cocci are of decisive importance for the pathogenesis of bronchopneumonias and all fatal complications.

Bernhardt previously examined forty-seven acute cases during life, and while failing to isolate *B. influenzae* from any, he regularly recovered from the cultures of the posterior throat and the expectorated mucus the same diplostreptococcus in enormous numbers and often in an almost pure condition. In direct films they are frequently intracellular, mainly in twos, sometimes in thick groups or in whole chains of four to six members. Minute in size, they appear oval or round, an impression of a capsule being at times conveyed. Growing sparsely on ordinary agar, they give on ascitic agar very small, translucent, round, sharp-edged, flat colonies which do not become confluent, however abundant the film. On human blood agar the very minute colonies seem to avoid the portions with deep layers of blood. They are hemolytic if not more than one twentieth to one thirtieth of blood is added, changing the color to a black greenish tinge like *Streptococcus mitior*. The cultures are not soluble in bile. Distinctly gram-positive, the organisms tend to involute, longish chains being met with composed of single cocci varying in size within one chain or in different chains in one field, so much so that an impression—proved experimentally to be erroneous—of a mixed growth is obtained. From glucose broth two varieties of colonies develop: a typical, delicate, clear and a thicker slimy colony which consists of twelve to fifteen membered chains. The cultures are not very viable, twenty-four to forty-eight hours sufficing to reduce greatly the abundance of subgrowth. Ascitic broth cultures are virulent to mice. In normal controls the organism is not encountered or is extremely sparse if present. Patients while coughing conveyed the organism to a distance of at least 50 cm., the colonies growing on exposed plates in groups of ten to fifteen. Such experiments were negative with convalescents after the fall of temperature. The diplostreptococcus is very aptly designated by Bernhardt as *Diplococcus epidemicus*. It bears most resemblance to *Streptococcus conglomeratus*.

Mandelbaum, who investigated bacteriologically Oberndorfer's cases, recovered streptococci in twenty-five, pneumococci in three, staphylococci in two, and *Streptococcus mucosus* in one case from the bronchial secretion on postmortem examination. He does not specify the characters of his cultures, which he considers all as secondary infective agents equally responsible for the lesions. He denies emphatically the causal relationship of Pfeiffer's bacillus to influenza. It should have been present in the lungs if it were the agent of the pandemic. The remarkable immunity of the groups of population over 30 clearly indicates a survival immunity to influenza, whereas classical experiments of Delius and Kolle had shown that Pfeiffer's bacillus is incapable of inducing active immunity in the animal body. It has been often isolated since 1892 in various countries, and yet there was no pandemic, in spite of its ubiquity. Thus other factors must be responsible for the outbreak of influenza.

Selter also failed to find *B. influenzae* in the sputums of thirty-three cases examined at Königsburg, although the cultural investigations were carried out with all care and rapidity. He does not consider Bernhardt's *Diplococcus epidemicus* to be the agent of pandemic. It belongs to the group of pneumococci, and is no doubt transmissible with the real virus. This—he agrees with Kruse—belongs most likely to the family of aphanozoa, invisible microbes, for it is striking that Pfeiffer's bacillus met until 1904 in many outbreaks was entirely absent from the big epidemic of 1908 in western Germany and France. He submitted himself and his woman assistant to an interesting experiment: their throats were sprayed for one-half minute with a saline filtrate of throat swab and throat washings of several patients. Both of them developed a typical though mild attack of influenza.

Kroner, Kisskalt in Kiel, Friedemann in Berlin, Kolle in Frankfort and Hirschbruch at Metz have failed to isolate *B. influenzae*. Kolle, it may be remembered, found a diplococcus apparently identical with that of Bernhardt.

Gruber and Schädel occupy an intermediate position. Of the 250 cases examined at Mainz they found *B. influenzae* only in fourteen, while from the overwhelming majority diplostreptococci were recovered. Bergmann found both the pneumococcus and *B. influenzae* at Marburg, the latter being isolated in a high percentage, in fifteen out of the twenty sputums examined. The strains were identified on the basis of the few typical characteristics. Pfeiffer (*Medical Supplement*, 1918, **1**, 306) has so far confined his observations to a short note stating that the inconstant finding of his bacillus was still under investigation. Simmonds reported very frequent findings of Pfeiffer's bacillus at St. George's Hospital at Hamburg, while Dietrich isolated regularly *B. influenzae* in the field, and had his cultures identified by Neisser. Gotschlich obtained 12 per cent. positive cultures from a series of twenty-three sputums in Giessen.

Uhlenhuth, a "die-hard" of bacteriologic orthodoxy, has clearly shown signs of uneasiness. Two series of cases were carefully scrutinized. In one group of fifty-one, "suspicious" bacteria were seen in direct films in 66 per cent. of specimens of sputum, the cultural recovery being limited to 13 per cent., while in addition one empyema and one throat swab yielded the looked-for growth. In a second group of forty-seven, eighty-four sputums were examined, and thirty-three cultures obtained from twenty-two cases, a percentage of recovery equaling 46.8. Blood cultures were uniformly negative. Thus Uhlenhuth cautiously concluded that *B. influenzae* is detectable in "not inconsiderable numbers." Yet he admits the extraordinary scantiness of the bacilli in films, although he blames the young bacteriologists for either not knowing how to recognize Pfeiffer's bacillus or inversely for producing, when challenged, cultures of any small gram-negative bacillus as *B. influenzae*.

He believes that experimental transmission of the disease should be tried; he himself failed to infect a monkey with Pfeiffer cultures, and shrank from experimenting on man in view of the danger of a complicating pneumonia. No "urgent reasons" exist in his opinion for abandoning the conception of the etiologic importance of *B. influenzae,* and he warmly recommends the use of the new mediums advocated by Levinthal.

Levinthal, some months before the epidemic started, set out to strengthen Pfeiffer's concept of influenza by raising the percentage of positive recoveries from sputums. It is admitted on all hands, and it has also found expression in the reports of the skeptics, that *B. influenzae* is notoriously difficult to cultivate even from a material microscopically swarming with it.

Symbiotic cultivation, particularly in a mixture with staphylococci, was experimented with many years ago, and furnished valuable indications as to the biology of the microbe, but did not prove a helpful means for routine diagnosis. It is, of course, a commonplace of bacteriology that *B. influenzae* thrives on hemoglobin and its break-down products and not necessarily on fresh blood. Guided by this, Levinthal concocted a new medium by adding fresh blood in a proportion of 1:20 to melted sterilized faintly alkaline agar, and, after thoroughly mixing, by boiling the whole for a few minutes, and then bringing it twice more to the point of ebullition. The blood clots and reclarifies the medium, which should now be filtered aseptically through gauze or paper, and kept ready for use in deep test tubes. The resulting agar is perfectly transparent, and grows *B. influenzae* in giant absolutely translucent colonies.

The yield is increased very considerably, the filamentous pseudoforms of the bacilli revert to the type, and, more important still, the cultures emulsify readily and keep in suspension without clumping spontaneously. Thus a basis was obtained for the application of the agglutination test as an additional means of diagnosis. Levinthal claims that live cultures on his medium produce highly specific potent serums when injected into rabbits, and that inversely patients or convalescents, but not controls, agglutinate his emulsions electively in dilutions of one fiftieth to one four-hundredth.

While highly praising the enriching qualities of this medium, Uhlenhuth was unable to confirm the virtues of the suggested "influenza Widal," which seems to have passed unheeded in the German literature.

. . . .

The story breaks here at present, and although Pfeiffer may yet furnish reasons why the verdict should not be pronounced, there is already sufficient material to shake the orthodox conception out of its high altar. Two facts stand out prominently: the generally acknowledged, or by some reluctantly admitted, absence of *B. influenzae* from the organs on postmortem examinations, and the universally recorded findings of diplostreptococci, singly or in association with the Pfeiffer bacillus.

DISCUSSION

The Pfeiffer conception, robbed of all hypothetic superstructure, rested in its essence on the fact of the obvious intimate relationship between bronchopneumonic lesions and the—practically never absent—bacilli. In 1892-1893 it was already reported that sputums may yield negative results; but the postmortem findings silenced the critics, who were persuaded that it was only faulty technic and capricious eccentricity of an unusual organism which vitiated the otherwise perfect harmony of theory and histologic pictures. Some few fossils of the heroic epoch never admitted defeat, and one of them, Hueppe, in an open letter to the *Deutsche medizinische Wochenschrift,* triumphantly points to the present negative findings as confirming his unabated disbelief in the etiologic significance of the hemophilic bacillus.

Doubtless the present outbreak deviates in certain particulars from the last pandemic. First, the age incidence is remarkable, and it must frankly be conceded that the hypothesis of a "survival immunity" is not convincing, since similar factors should have operated twenty-seven years ago, when they did not. One should rather agree with Lubarsch that the disturbance of the war has caused a profound alteration in the normal course of the epidemics. Indeed, there is the precedent of poliencephalomyelitis, which many authors sought to differentiate from the Heine Medin concept on the basis of an unusual age incidence. Secondly, the blood picture is not one of leukocytosis, as classically described. Levy, at the Berlin Charité, came to conclusions corresponding with the English experience, namely, that there is leukopenia at the expense of polynuclears, the lymphocytes and large mononuclears increasing proportionately, the latter reacting sometimes even 21 per cent. of the total. Leukocytosis should be regarded as a sign of complications, while complicating infections without it are prognostically ominous. Thirdly, there is the seasonal difference (spring and not autumn), and the apparent western origin of the explosive outbreak. As to that, great caution is indicated. The whole globe being at present a "ward in censorship," it is not possible to decide whether the present is a European or a world pandemic, a problem of great importance in view of the seemingly varying cycles of the two (twenty to thirty to forty to fifty years), a circumstance which might throw light on factors regulating the immunity. Neither is the western origin to be taken as granted. Ginns, at the Medical Society of Berlin, suggested that the virus might have been imported by Chinese laborers, employed behind the front, while Legroux of the Pasteur Institute stated in the public press that the "Spanish" disease made its first appearance in the area of Dunkirk, and only thence traveled southwest. The absence of prodromal catarrhal symptoms may be explicable by the unusual season of outbreak, and it is to be feared that epidemiologic purists may yet obtain satisfaction at seeing a much graver catarrhal form during the second tide, which already had begun to rise in Spain and in Sweden, as well as in Italy, as an apparently more severe illness.

Without laying too great a stress on the (so far) scanty publications from the field, it cannot be denied that *B. influenzae* was more often recovered from troops in the battle zones, who seem to have been subjected to a much milder type of attack. It is interesting to note that the Budapest clinic claimed to have isolated the Pfeiffer bacillus from every case examined—a fact which, if correct, might be correlated with the observations from the fronts.

The cold logic of the postmortem room in the dispassionate home surroundings does not leave, however, any doubt that Pfeiffer's bacillus when present did not play any more important part than the ubiquitous diplostreptococci. The real virus classified "faute de mieux" as "invisible" or a "filter passer," so as to cloak our ignorance of its nature, remains to be discovered.

THE DIPLOSTREPTOCOCCI

The diplostreptococci, although secondary in point of time and apparently primary in deciding a fatal issue, seem to be transmissible from man to man equally with the main virus. The observation that bronchopneumonias tend to spread in the wards of fever hospitals was made years ago, and there are institutions, as, for example, the Plaistow fever hospital, which include the disease in their list of infections to be "barriered." The remarkable frequency of fatal pneumonias during the last three years has been commented on. It seems to have risen again some two months before the first tide of this pandemic almost all over Europe. It was characterized by the circumscribed character of the outbreaks and by a preference for attacking young, vigorous men. There is room for inquiry whether these isolated epidemics were not the brewing ground, the preparatory drum fire, preceding the general assault by the main virus. It may cause surprise that these bacteria were not universally encountered before, or that, if met with, no significance was attached to their presence. But, first, there has been growing of late a tendency for disregarding organisms of the textbook type as mere obsolete formations, a sort of background scenery amid which the real virus must hide somewhere in its commonly assumed invisible form. Secondly, with a few exceptions, these diplococci remain unclassified both on account of the unsatisfactory or insufficient standards of identification, and of the deplorable multiplication of researchers who have invaded laboratories with a very inadequate scientific equipment aggravated by a firm refusal to practice modesty of conclusions, or to observe elementary accuracy in recording observations.

A breadth of outlook is also a necessity. The cyclical appearance of epidemics causes no surprise, but it is obviously based on a (so far) unaccountable periodic visitation of the globe by unusual bacteria. It may be that the diplococci are the novelty of the present season, condemned to oblivion after the ebb and flow of influenza and its companions will subside, and Bernhardt's designation of *Diplococcus epidemicus* is a fitting provisional label. Among the companions of "grip," epidemiology records almost regularly coincident epizootics among horses. There are two varieties: the "pink-eye," the *Pferdestaube*, or *Druse*, strangles of English and *gourme* of French authors, a coryza contagiosa equorum clinically manifesting itself as an influenza catarrhalis, and the pneumopleurisy, *Brustseuche*, an influenza pectoralis. Now, the latter infection gives anatomic pictures closely resembling those of the present pandemic. Purulent fibrinous bronchitis, bronchopneumonias, swelling and suppuration of lymphatic glands, as well as the lightning character of the outbreak and the prevalence of the first catarrhal variety on the onset, make of this epizootic an analogous infection. Some authorities hold that the two epizootic types are distinct "entities," and the *Streptococcus equi* of Schütz has been long ago identified with strangles, while the French school of Lignières associates *B. bipolaris-equisepticus*, a member of the manifold group of "Pasteurella," with the pneumopleurisies. The strangles has been lately transmitted from horse to horse by means of filtrates of infectious material, while Gaffky and Lührs have infected horses with inflammatory mucus of the pneumopleurisy at a stage of its microscopic sterility. There is complete unanimity, however, that the two bacteria are commonly found in the excretions and organs of the exudative inflammatory period of suppuration. Now *Streptococcus equi* in microscopic morphology and type of growth strikingly resembles the diplococcus of Rosenow, and most likely the *Diplococcus epidemicus* of Bernhardt. As to *Bacillus bipolaris-equisepticus*, morphologically it is indistinguishable from some of the gram-negative bacilli described by certain authors mentioned above as Pfeiffer's bacillus deviating from the type. It is not, however, hemophilic, and grows easily on ordinary mediums. It is undeniable, nevertheless, that during the present pandemic bipolar gram-negative, delicately growing, and nonhemophilic bacilli were often isolated from the organs. Hirschbruch, who regards these organisms as most likely corresponding with the bacteria of the human infections, draws attention to the fact that neo-arsphenamin, a proved remedy for the epizootics, has been successfully applied in Switzerland in the treatment of severe cases during the present pandemic. The Swiss have also isolated Pfeiffer's bacillus only occasionally, and also dwell on the presence of secondary diplostreptococcic infections.

Thus a fruitful field for research is opened in many directions. It is, unfortunately, only too certain that a second and more severe wave of influenza will spread over Europe in a few months. The results of the experience gained so far suggest that active immunization, both for prevention and treatment of the grave complications, with the diplostreptococci should be attempted. Streptococcal serotherapy might also be tried. A large group of several hundreds of cases should be thoroughly investigated by a team of workers—clinicians, bacteriologists, morbid anatomists and epidemiologists—working in correlated agreement. Experimental transmission to animals should enter in the scheme, while cultures obtained from various districts should be sent for classification and comparison to the main working center.

The team of workers would doubtlessly remember that "it is the property of things seen for the first time, or for the first time after long, like the flowers in spring, to reawaken in us the sharp edge of sense and that impression of mystic strangeness which otherwise passes out of life with the coming of years."

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Rest and the Tuberculosis Patient.—The influence of rest in abating the severity of an inflammatory process is well known. The effect of motion and of friction in spreading infection from a suppurating focus is a familiar surgical fact. Not only should deep breathing be avoided in the tuberculous patient but motion of the upper extremities should be reduced to a minimum. Rest is also highly desirable to promote a cicatrization and encapsulation. And lastly rest of the body is needed for its recuperation. Psychic and physical relaxation should both be practiced. The neurasthenic tuberculous patient with the anesthesia of fatigue or the restlessness of the overfatigued who are "too tired to rest" must learn to rest and relax not only to recreate his energy in some measure, but to store it up. Rest must be the only means associated with the outdoor life so far as is practicable.—*Amer. Rev. of Tuber.*

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SATURDAY, NOVEMBER 9, 1918

OBSERVATIONS ON THE PRESENT EPIDEMIC OF SO-CALLED INFLUENZA IN EUROPE

The highly interesting abstract of recent English and German articles on so-called epidemic influenza, prepared by the British Medical Research Committee and printed verbatim in this issue of The Journal,[1] invites a few brief comments. The abstracts do not convey any clear information as to the extent of the spread or the severity of the disease in Europe. Judging, however, from the number and the nature of the articles abstracted, it looks as if the disease, thus far at least, has been more severe and more extensive in Germany than in England. One also receives the impression that the results of the bacteriologic and anatomic studies in Germany correspond more closely, perhaps, to the results that are being obtained in this country than do those coming from England. But it is entirely too early, of course, to form any reliable conclusions.

The articles abstracted seem to have been meager in clinical detail. It is evident that the observations at hand do not indicate the present epidemic to be a distinct clinical entity, clearly differentiated in its clinical activities from similar previous epidemics of more limited extent. The present epidemic apparently differs from these earlier epidemics mainly in contagiousness and in its extensive spread. The many minor epidemics of respiratory infections preceding the present epidemic are of great epidemiologic interest, but their true relation to the European influenzal disturbance can probably not be traced accurately. The fundamental anatomic changes in influenza, according to the German reports, seem to have been hemorrhages, especially in the respiratory tract, as well as inflammatory foci, the whole suggesting to some of the investigators a primary infection of the blood with localization especially in the pulmonary vessels. It would seem, however, that the possibility of direct infection of the respiratory tract cannot be excluded. These changes are regarded as paving the way for secondary infections. It is of great interest that there is no unanimity of opinion whatever as to the nature of the primary infecting agent.

The bacteriologic results do not appear to warrant the assignment of any greater importance to the influenza bacillus than to the organisms described as diplostreptococci. These diplostreptococci are not described fully, but they most probably are nonhemolytic streptococci of the viridans type. Only slight mention is made of hemolytic streptococci or of pneumococci, which appear to be isolated in a certain proportion of the cases of influenzal pneumonia in this country.[2]

On the whole, the results of the work covered by the abstracts support the conclusion that we do not understand the true nature of the condition now being called epidemic influenza; that there is not sufficient evidence to regard any one of the different forms of bacteria found in the respiratory tract in the cases of the disease as the primary cause, but that all the bacteria, the influenza bacillus, as well as the so-called diplostreptococci and others, may be secondary invaders, transmissible from person to person with almost the same ease as the supposed, but unknown, primary cause. The one experiment mentioned bearing directly on the question of the exact etiology of epidemic influenza is that by Selter, who produced a typical but mild attack in two persons by spraying the throat with a filtrate of influenzal throat secretions; but not enough details are given so that one can form any judgment as to the value of this experiment.

THE REDUCTION OF BODY WEIGHT IN WAR TIME

Reports that have reached this country from Germany at intervals since the beginning of the world war have indicated that the unquestioned shortage of food has not been without effect on the civil population. It has been freely stated that a loss of body weight has in many cases followed the reduction in the available food. In some quarters the lowered intake necessitated by the emergency, particularly a year or more ago, has been hailed as a change by no means disadvantageous to the organism. "We eat too much," according to the dictum of those enthusiasts who see only advantage in an enforced dietary economy for a large part of the civil population, particularly for the great number of sedentary persons whose energy demands are primarily determined by the routine necessities of life rather than by muscular work of an arduous sort.

Since the American people have also been called on to exercise economy and avoid dietetic extravagances, it is timely to ask what the available evidence justifies us in concluding on the subject of reduced rations. There seems to be little doubt that the rumors of reduction in body weight are not without foundation. Loewy,[1] a Berlin physiologist of experience in the study of nutrition, reported some time ago, as the result of statistical inquiries made by him, that already in April, 1916, the restriction in the food intake among large groups of the population was represented by an energy intake of between 2,200 and 2,300 calories a day, with an average protein content of from 65 to 68 gm. Loewy believed that such a regimen may be adequate in respect to its quota of protein, but that the energy that it represents would in general scarcely satisfy a sedentary person.

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[1] Page 1573.

[2] Nuzum, J. W., et al.: Pandemic Influenza and Pneumonia in a Large Civil Hospital, this issue, p. 1562. Strouse, S., and Bloch, L.: Notes on the Present Epidemic of Respiratory Disease, this issue, p. 1568.

Since then a significant confirmation of the effect of the war time diet on the weight of the average German male citizen has been disclosed through the authority of Prof. Friedrich Müller, the Munich clinician. He has reported that in Munich men under 50 years of age had experienced an average loss of weight amounting to 10 per cent. in the two years preceding 1918. This leads his assistant, Dr. Jansen,[2] to remark that the former norm of 70 kg. for the adult man must be regarded as represented by 60 kg. in 1917 in Germany. Among a group of medical students examined by Jansen in the spring of 1917, all had experienced losses of weight amounting to 4 or 5 kg. during the war.

Such experiences raise the question as to the actual effect of a prolonged and considerable reduction of the diet on the metabolism. Since the law of the conservation of energy applies in the human organism, the food requirement must be equivalent to the metabolism in any event. Is this a fixed factor, so far as the maintenance component is concerned, or does it become altered with changing planes of nutrition? When the body weight declines as a result of short rations, is a point of equilibrium finally reached at which the scant supply suffices? To answer such pertinent questions Jansen has made observations on men averaging 62 kg. in weight and kept on restricted diets including 60 gm. of protein and 1,600 calories a day. The basal metabolism of these persons (at rest without food) averaged 1,400 calories. On the limited food intake there was continued loss of protein, amounting to nearly 12 gm. a day. When an additional 500 calories in the form of carbohydrate (lactose) were fed, the loss of nitrogen was nearly averted, showing that when enough total food energy is furnished, 60 gm. of protein in the daily diet may suffice to prevent loss of nitrogen from the tissues.

So far as the observations on the minimal protein requirement are concerned, there is nothing essentially new in these findings. It has repeatedly been demonstrated that the conventionally assumed requirement of more than 100 gm. of protein a day is unnecessarily high in the light of modern researches. The energy features of the restricted diets cannot be so lightly dismissed. After reduction in body weight there was a lowered basal metabolism, which Jansen, like Loewy and Zuntz,[3] attributes to a decrease in the active cell substance of the body. The persons involved were far from comfortable on the restricted diet; and when the task of a long march was further imposed on them, symptoms of distress ensued. In other words, the scanty maintenance diet of 2,100 calories for an adult man leaves no factor of safety for vigorous physical exercise.

In this country, Benedict[4] and his co-workers at the Carnegie Nutrition Laboratory in Boston have made somewhat analogous, though far more elaborate studies on the effects of a prolonged reduction of diet on twenty-five men. A gradual reduction in weight to a point 12 per cent. below the initial weight took place during a period of from three to ten weeks, with low calories and a moderate amount of protein in the food intake. The normal demand of the men prior to the dietetic alteration ranged from 3,200 to 3,600 net calories. One squad of twelve men subsisted for three weeks on 1,400 net calories without special disturbance. Benedict states that notwithstanding the great reduction in the metabolism (which he believes was due to the removal from the body of the stimulus to cellular activity of approximately 150 gm. of "surplus nitrogen"), the whole period of lowered food intake had no untoward effect on the physical or mental activities of these men, and they were able to continue successfully their college duties. The psychologic report concludes that a prolonged reduction in diet produces some decline in neuromuscular activities, but this does not seem nearly so definite or so large as the changes in metabolism and allied measurements. The psychologic changes were not such as materially to interfere with a satisfactory discharge of the common duties of student life.

Seemingly in contrast to the German experience, Benedict's carefully selected subjects were less distressed by the privations of the diet. The measurement of their metabolism in walking showed a marked saving in the energy requirement for walking in favor of the reduced diet, whether considered on the basis of the gross energy expended, which represents the real cost to the individual and to the national food reservoirs, or on the basis of the energy required per horizontal kilogrammeter. Nevertheless it will be wise, in view of conflicting statements, to hesitate to lower the body weight of the populace at large to any considerable extent by rationing measures for the debated advantage of greater efficiency. The significance of "surplus protein" has not yet been clearly defined.

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[1] Loewy, A.: Deutsch. med. Wchnschr., 1917, Nos. 6 and 7.

[2] Jansen, W. H.: Untersuchungen über Stickstoffbilanz bei kalorienarmer Ernährung, Deutsch. Arch. f. klin. Med., 1917, **124**, 1.

[3] Loewy, A., and Zuntz, N.: Berl. klin. Wchnschr., 1916, No. 30.

[4] Benedict, F. G., and Roth, P.: Effects of a Prolonged Reduction in Diet on Twenty-Five Men, I, Influence on Basal Metabolism and Nitrogen Excretion, Proc. Nat. Acad. Sc., 1918, **4**, 149. Miles, W. R.: Effects of a Prolonged Reduction in Diet on Twenty-Five Men, II, Bearing on Neuromuscular Processes and Mental Condition, ibid., p. 152; Smith, H. M.: Effects of a Prolonged Reduction in Diet on Twenty-Five Men, III, Influence on Efficiency During Muscular Work, ibid., p. 157.

MORE MILK FOR VITAMINS

More than ten years ago the English physiologic chemist, F. G. Hopkins,[1] had found experimentally that an animal cannot live "on a mixture of pure protein, fat and carbohydrate; and even when the necessary inorganic material is carefully supplied, the animal still cannot flourish." In connection with these investigations he made the important discovery that a surprisingly small amount of milk as well as extracts of some other natural foods confer a nutritive adequacy on the otherwise insufficient ration. Meanwhile Osborne and Mendel[2] in this country demonstrated that the residual part of milk from which its fat and protein had been removed exhibited a growth-promoting or nutrition-promoting property when it was added to mixtures of the purified familiar foodstuffs. Subsequently McCollum and Davis and Osborne and Mendel independently announced that the fat of milk (butter fat) also exerts a further growth-promoting influence presumably due to something different from the known fats but closely associated with them. Thus the significance of the vitamins—a water-soluble and a fat-soluble type, respectively—in milk became established.

These discoveries have since been verified for various species. The lack of either the fat-soluble or the water-soluble essential properties has been believed to lead to distinct pathologic consequences when these vitamins are not replaced from other sources in the diet. Conversely, the presence of these "specifics" for good nutrition and growth contributes in no small measure to make milk the unique food that it is justly regarded to approximate. Hence we can understand what Mrs. Rose[3] intended to imply by this fanciful comment: "When the milk pitcher is allowed to work its magic for the human race, we shall have citizens of better physique than the records of our recruiting stations show today. Even when the family table is deprived of its familiar wheat bread and meat, we may be strong if we invoke the aid of this friendly magician."

Osborne and Mendel[4] have more recently come to the conclusion that from a quantitative standpoint cow's milk is not as rich in the water-soluble vitamin as one not familiar with the experimental evidence for this property of the food might assume. This is in no sense to be construed as a denial of the "magical qualities," but rather as an argument for the more liberal use of milk when it is relied on largely to contribute the growth-promoting factors in the diet. From a practical standpoint it appears not unlikely, to cite the warning of Osborne and Mendel, that the need of children and other growing animals for the water-soluble vitamin, beyond the earlier stages of development when milk admittedly satisfies the nutritive requirements, may not be adequately filled by some of the current or enforced dietary practices. Thus, they add, with a too scanty allowance of milk, a liberal inclusion of products from cereals rendered poor in vitamin by milling, of sugar, fats, and few additional animal products other than meat (which has been shown to contain relatively little of the water-soluble vitamin), it is not surprising if disasters sometimes manifest themselves.

Another aspect of the significance of their quantitative studies of the vitamins in cow's milk has been presented by Osborne and Mendel in relation to milk dilution in infant feeding. It is a common practice to reinforce the supply of calories by diluting top milk and adding lactose. Under these circumstances, we are reminded, the child is supplied with a food that contains a relatively smaller proportion of the water-soluble vitamin than does the original cow's milk. While milk thus modified may contain sufficient vitamin as long as the food intake is normal, if for any reason the child's appetite fails, the vitamin supply is reduced and endless dietary troubles may easily result.

Without attempting to evaluate the actual degree of danger attributable to such causes in the artificial feeding of infants, we may well bear in mind the potentialities for harm. It may be that the young of healthy mothers are born with a reserve supply of the so-called vitamin substances sufficient to maintain them in good nutritive condition until the time when they begin to eat other foodstuffs. If milk is not always as rich in vitamins as is desirable at later stages of growth, there may be real wisdom in the practice of extending the diet as soon as the physiologic conditions of the individual warrant the use of other foods.

Training in Occupation Therapy.—A new course of instruction has been established by Columbia University in the School of Practical Arts in the Teachers' College for the purpose of training women in occupation therapy. The instruction will be given by specialists in nervous and mental diseases. In order to obtain a diploma, seven courses are required, comprising the medical aspects of occupational therapy, the methods of teaching this treatment, observation and practice work with the patients in institutions, the elements of psychology, art structure or design, and at least two craft courses. It is important that those taking up this work be of the normal, wholesome, well balanced type, with vigor and physical endurance. Other requisites for this branch of service are: First, the teacher should understand sick people. In the second place, she should have the psychologic background for teaching, and finally, she should be skilled in the arts and crafts.

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2. Osborne, T. B., and Mendel, L. B.: Feeding Experiments with Isolated Food Substances, Pub. 156, Carnegie Institution of Washington, Parts I and II, 1911.
3. Rose, Mary Swartz: Everyday Foods in War Time, 1918, p. 11.
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Current Comment

VALUE OF VACCINATION AGAINST INFLUENZA

We publish in our Correspondence Department in this issue an interesting letter with the above title. In it the author apparently takes it for granted that the influenza bacillus is the primary cause of the acute epidemic respiratory infection now pandemic and being generally called influenza. There is no conclusive evidence that the Pfeiffer bacillus plays any greater rôle, if as great, in the present epidemic than any other bacteria found in the respiratory tract in this disease. This point emerges very clearly in the abstract of recent English and German literature and in the original contributions printed in this issue. We would also emphasize that, so far as we know, the influenza bacillus is a very poor antigen; there is, in fact, nothing to show that definite antibodies against this bacillus develop in the course of influenza, and the results of animal experiment show that it requires prolonged immunization before any response becomes apparent. Again, we have no record of any properly conducted and controlled experiments on human beings with influenza vaccines. No results of careful observations are as yet at hand. These things being so, what should a fair-minded and thoughtful physician say as to the face value of influenza vaccine? In this connection we give two examples of so-called "evidence" that appeared in newspapers, which seem to be the medium through which most of the evidence is appearing. One appeared in the health department, conducted by a physician, of a metropolitan newspaper in the middle west under the utterly misleading heading "Vaccine Blots Out 'Flu.'" We quote:

> The evidence of the efficiency of the treatment is this: On October 20, about half the population of a town of 10,000 had been vaccinated at least in part. There have been seven cases of the disease. All the cases were among unvaccinated people. In a nearby town, with 400 inhabitants, there have been 200 cases and fifteen deaths. In the asylum three cases developed. Everybody was vaccinated and the disease did not spread. In St. Mary's Hospital the disease got a foothold among the doctors and nurses. After vaccination the disease stopped at once.

The other appears in an eastern paper as an interview with a physician, who, incidentally, is a manufacturer of vaccines, although this vital fact does not appear in the item. Again we quote:

> I think it but just that I should report the success I have had in treating and preventing Spanish influenza with vaccine. I have given over 1,000 inoculations with 100 per cent. protection and treated several hundred cases with no deaths. Prior to the time I used vaccine nearly every one exposed to the disease contracted it. Now I blot it out of every house at my first visit by inoculating the entire family.

This so-called evidence has not yet been submitted in any scientific manner with the necessary facts and details to permit any judgment whatever to be formed as to its true value. In the meantime, we should not forget that in its natural course, epidemic influenza is affecting different, even adjacent, communities with widely varying degrees of severity, and that vaccination in an institution after the disease has appeared can have no value as an experiment because it may have been done in the wane of the epidemic. Finally we repeat: Vaccination against epidemic influenza is in a wholly experimental stage. Nothing can be learned as to its real value from indiscriminate vaccination of the public. The physician who, in view of the severity of the epidemic, feels that he is justified in vaccinating his patients, should be fair to them and protect himself by informing the patient that he regards the procedure as wholly of an experimental nature. Pending developments, nothing should be done by the medical profession that may arouse unwarranted hope among the public and be followed by disappointment and distrust of medical science and the medical profession.

EMERGENCY EDUCATIONAL STANDARDS AND STATE LICENSURE

Thirty-two state licensing boards either in the practice laws or by board rulings require that, before entering on the study of medicine, the student must have completed two years of premedical college work. This requirement as usually interpreted means sixty semester hours of work taken in two annual sessions of nine months each, and usually the two sessions are separated by a summer vacation of three months, making a total in actual time of twenty-two months. Divided into "quarters" of three months each, this would require seven quarters. Now, as noted in The Journal recently,[1] the Committee on Education and Special Training of the War Department has decided not only to do away with the summer vacation but also to condense the work of the remaining six quarters into four, or into a continuous session of twelve months. This means that the student will have to work proportionally harder at his professional studies; but with the rigid military routine there will be more time at his disposal than in the haphazard time-wasting methods of the former régime. The physical exercise required in the eleven hours per week of military drill will help to keep the student physically fit for the extra mental effort required of him. The object hoped for is to secure an equal amount of valuable training in two thirds of the time heretofore spent in obtaining it. The important question for licensing boards to decide is whether they can legally accept this course as the equivalent of the preliminary education required in their respective states, when these students apply for licenses. Based on correspondence conducted by the Council on Medical Education, nearly all the boards that were given ample authority by their practice acts stated their intention to cooperate with the War Department to the fullest extent possible in any measures made necessary by war conditions. In a few other states, amendatory clauses may need to be inserted in the practice acts so as to provide for graduates who began the study of medicine under these special regulations laid down by the War Department. This condensed schedule may, in fact, lead to permanent changes and important improvements both in methods of teaching and in state board requirements. There may, indeed, be an awakening to the fact that much valuable time heretofore has been lost to the student through the adherence to long obsolete arrangements of college curriculums as well as in the time wasted in the long summer vacations. If what has heretofore required six or seven years can be completed in four or five, the two years saved of the average student's time will make some changes in medical license regulations well worth while.

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[1] Schedule of Studies for Premedical Students, Current Comment, The Journal A. M. A., Oct. 19, 1918, p. 1317.

PASSING THE INFLUENZA BUCK

The Madrid correspondent of The Journal in his letter in this issue wishes it clearly understood that Spain does not care to take the responsibility for having initiated the present epidemic of respiratory disease. His protestations are both informing and amusing. Our Paris correspondent, also in this issue, feels too that the onus of responsibility should not be placed on Spain since the epidemic occurred both in France and in Germany. As one views the devastation which the disease has caused he is inclined to sympathize with the efforts of Spain or any other country to pass the buck.

ESSENTIAL TEACHERS AND THE DRAFT

Lists of essential teachers have been furnished by deans of well recognized medical colleges to the Surgeon-General of the Army and, as stated in a previous comment,[1] these teachers are not to be commissioned but are being retained at their teaching duties. But this arrangement does not exempt essential teachers of draft age from the requirements of the Selective Service Regulations. Such teachers, therefore, when filing their questionnaires should ask for a deferred classification on the ground that they are engaged in an activity "necessary to the public welfare and to the prosecution of the war." And whether the registrants ask for the deferred classification or not the deans of the medical schools should claim for their essential teachers this deferred classification in accordance with the Selective Service Regulations. While, as stated in one of their extracts, "it shall be the duty of advisers to confer with the managers and heads of various industries"—and this means, also, deans of medical schools—experience shows that the initiative usually has to be taken by the deans of the schools, if their essential teachers are to be retained. And this should be done promptly, since it will be difficult or impossible to get them back after they have once been classified. A ruling recently adopted in the War Department is to the effect that "men heretofore or hereafter classified in Class 1, Group A, and called to military service will not be granted furloughs." The class in which essential teachers of draft age should be placed is Class III-K, which is provided for technicians and experts in necessary industries. Since our medical schools are now practically military institutions in which soldiers on active duty in the U. S. Army are being trained to become efficient medical officers, it is important that the teaching faculties should be kept intact.

RESERVE OFFICERS FOR THE PUBLIC HEALTH SERVICE

Senate Joint Resolution No. 63, establishing a Reserve in the Public Health Service, has finally passed and been approved by the President. It authorizes the President to appoint and commission as officers in the Public Health Service Reserve citizens who, on examination, are found physically, mentally and morally qualified, the commissions to be in force for a period of five years. The officers commissioned shall be distributed in the same proportion as among the present commissioned Medical Corps of the Public Health Service among the several grades now obtaining in that service, namely, Assistant Surgeon-General, Senior Surgeon, Surgeon, Passed Assistant Surgeon, and Assistant Surgeon, which correspond respectively to the grades of Colonel, Lieutenant-Colonel, Major, Captain, and Lieutenant in the Army. Regulations for the organization and government of the Reserve Corps are now being prepared for submission to the President. In view of the manifold activities entrusted by law to the Public Health Service and the expansion of its functions by executive order of July 1, 1918, the new Reserve Corps will include in its membership a personnel with varied qualifications. In addition to physicians who will form the bulk of the reserve this will, therefore, comprise among others, sanitarians, sanitary engineers, chemists and bacteriologists. The passing of this law is another step toward adequate control of national health interests.

THE SEWAGE POLLUTION OF BOUNDARY WATERS

The International Joint Commission on Boundary Waters Between the United States and Canada has recently issued its final report.[1] The conclusions of the commission are based on the best expert knowledge and opinion now available, and will doubtless receive the consideration they deserve. The chief interest in the report centers in the limits of permissible pollution that are established. The commission recognizes that sewage disposal by dilution is a natural resource and that the utilization of this resource is justifiable for economic reasons, always assuming that an unreasonable burden or responsibility is not placed on the water purification plant, so as to occasion menace to the public health. It is believed by the commission that the safe loading of a water purification plant is exceeded if the annual average of *B. coli* in the water delivered to the plant is higher than about 500 per hundred c.c. As a working rule, it has been found that if, under conditions actually existing, the city sewage is diluted in the stream flow to 4 cubic feet per second per capita of the population, the resulting water will contain approximately 500 *B. coli* per cubic centimeter. Perhaps the essence of the report is found in the recommendation that all sewage should receive some purification treatment before being discharged into boundary waters, the degree of such treatment to be determined in large measure by the limit of safe loading of a water purification plant. The report marks a distinct progress in the practical adjustment of sewage disposal necessary to the public welfare.

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[1] The Problem of Essential Teachers in Medical Schools, Current Comment, The Journal A. M. A., Oct. 26, 1918, p 1412.

[1] Engin. News, Oct. 10, 1918, p. 660.

Medical Mobilization and the War

Resolution to Provide a Reserve Corps for the Public Health Service

A joint resolution to provide a reserve corps for the United States Public Health Service was approved by the President on October 27. The resolution states:

> *Resolved*, by the Senate and House of Representatives of the United States of America in Congress assembled, That for the purpose of securing a reserve for duty in the Public Health Service in time of national emergency there shall be organized, under the direction of the Secretary of the Treasury, under such rules and regulations as the President shall prescribe, a reserve of the Public Health Service. The President alone shall be authorized to appoint and commission as officers in the said reserve such citizens as, upon examination prescribed by the President, shall be found physically, mentally, and morally qualified to hold such commissions, and said commissions shall be in force for a period of five years, unless sooner terminated in the discretion of the President, but commission in said reserve shall not exempt the holder from military or naval service.
>
> *Provided*, That the officers commissioned under this act, none of whom shall have rank above that of Assistant Surgeon-General, shall be distributed in the several grades in the same proportion as now obtains among the commissioned medical officers of the United States Public Health Service and shall at all times be subject to call to active duty by the Surgeon General, and when on such active duty shall receive the same pay and allowances as are now provided by law and regulation for the commissioned medical officers in the said regular commissioned Medical Corps.

Weekly Bulletin, American Expeditionary Forces

The following paragraphs are taken from Weekly Bulletin No. 26, Oct. 7, 1918, issued for circulation among American medical officers in France:

JUDGMENT AND INGENUITY DEMANDED IN TRANSFERRING PATIENTS BETWEEN HOSPITALS

(*a*) Do not transfer patients with pneumonia or respiratory tract infections; absolute rest is as vital to them while they are meeting and overcoming the infection as operation is for penetrating wounds of the abdomen. Patients with infectious diseases while still in the communicable stage should not be transferred.

(*b*) A good many patients with bone and joint injury are being evacuated from one hospital to another either inadequately splinted or entirely without splints. The excuse commonly given is that the standard splints are not available.

Such an excuse is, of course, entirely insufficient, since even though the standard splints are not available, the ingenuity of the surgeon should be used to devise some form of appliance that would be reasonably satisfactory for transport use until the regular splints can be used.

SERIOUS PRESENT SITUATION IN A. E. F.

During the past week there has been further extensive incidence of pneumonia, in almost all instances accompanying the prevailing epidemic of influenza. Large convoys brought to the base ports several thousand cases of severe influenza and many hundreds of cases of pneumonia. The death rate (case mortality percentage) among the pneumonia patients has risen to 32 per cent. for the A. E. F., and in some groups of cases it has been 80 per cent.

When unseasoned men have been sent to the A. E. F., the percentage attacked by influenza on shipboard and the percentage of complicating pneumonias developing among these contingents after arrival has been unusually high, 100 per cent. sick being reported from the Five Hundred and Thirty-Ninth Labor Battalion (Negro).

In addition to the three cardinal causes of high incidence of respiratory affections that still prevail widely (i. e., (1) overcrowding, (2) exposure to wet and cold, and (3) fatigue from overwork, long journeys, loss of sleep, or worry) there has been much pneumonia developing among men with influenza evacuated to base hospitals who should at all costs and by every means possible be kept where they are taken sick. Absolute rest, even though in the absence of skilled nursing, or under very primitive conditions of shelter, is indispensable to escape the complication of pneumonia.

Meningitis has made another sudden rise in incidence, as had been expected. Forty-eight of the seventy-one cases reported in the week were in the base sections, and thirty-three of the cases were found among troops on arrival of a convoy at one port.

Dysentery, diphtheria, measles, paratyphoid, scarlet fever and typhoid fever show a very satisfactory reduction during the week.

Provision for Essential Teachers in Medical Schools

The Committee on Education and Special Training of the War Department has issued the following circular letter relative to furloughs, induction and transfers for the information and guidance of institutions having a unit of the S. A. T. C.:

MEMORANDUM for Commanding Officers, Students' Army Training Corps, and Presidents of Students' Army Training Corps Institutions.
Subject: Policy as to Teachers Registered under Selective Service Act.

1. Men heretofore or hereafter classified in Class 1, Group A, and called to military service will not be granted furloughs.

2. Teachers who are essential are eligible to claim deferred classification under Section 80, Selective Service Regulations, and they are encouraged to do so. Such deferred classification should be claimed for them by the educational institution by which they are employed, in accordance with the paragraphs from Section 80, Selective Service Regulations.

3. Teachers who are denied deferred classification by the district board and who are liable to call to military service will be encouraged to request voluntary induction in the unit of the S. A. T. C. stationed at the institution where such instructors are employed.

4. In very exceptional cases and upon the recommendation of the Educational Department of the Committee teachers who have already been drafted and are now at mobilization camps will be transferred back as soldiers on active duty to the unit of S. A. T. C. where needed; provided such instructors do not object to return as soldier-instructors, have not been permanently assigned in a capacity wherein their services will be of great value to the Army, and have not already been designated to attend Officers' Training Schools.

5. Since the colleges are under contract with the War Department to train enlisted men in the U. S. Army, essential teachers are obviously engaged in occupations that are strictly "necessary to the maintenance of the Military Establishment." It is, therefore, expected that the really essential professors and teachers will be granted deferred classification under the law on this account. Heads of institutions should see to it that district boards and their industrial advisers are fully informed of all the facts in every case.

By direction of the Committee.

R. I. Rees,
Colonel, General Staff Corps Chairman.

October 1, 1918.

COMMISSIONS OFFERED AND ORDERS TO DUTY ON ACCEPTANCE

Alabama

To Camp Beauregard, La., Lieuts. C. E. FORD, Roanoke; R. D. PORCH, Sylacauga.

To Camp McClellan, Ala., Lieut. J. W. GWIN, Bessemer.

To Camp Sheridan, Ala., Lieut. D. H. Chilton, Patton. Base hospital, for instruction, Lieut. W. B. HARDY, Birmingham.

To Camp Wheeler, Ga., Lieut. D. R. CORNELIUS, Pratt City.

To Fort Oglethorpe for instruction, Capts. W. M. WALDRUP, Bessemer; W. S. SOWELL, Empire; W. M. BOOTH, Hartsells; Lieuts. T. COLLINS, Birmingham; E. S. PRICE, Buhl; H. F. DOWNS, Clanton; G. H. SMITH, Ensley; W. D. MIXSON, Midland City.

To report to the commanding general, Southeastern Department, Capt. A. A. KIRK, Tuscaloosa; Lieut. E. T. BARKER, McFall.

Arizona

To Fort Oglethorpe for instruction, Capt. R. B. DURFEE, Bisbee.

To Fort Riley for instruction, Lieuts. T. R. WHITE, Kingman; H. W. RICE, Morenci.

To report to the commanding general, Southern Department, Capt. E. C. BAKER, Phoenix.

Arkansas

To Fort Oglethorpe for instruction, Capts. F. E. HARRISON, Fordyce; W. A. MOORE, Rogers.

To Fort Riley for instruction, Capts. O. E. JONES Newport; A. M. ELTON, Yellville; Lieuts. E. R. KING, Ben Lomond; V. V. BUTLER, Huntington; F. YOUNGBLOOD, Huntsville.

To Fort Sam Houston, Texas, Lieut. J. R. DALE, Jr., Texarkana.

California

To Camp Cody, N. M., base hospital, for instruction, Capt. E. J. COOK, Lieut. C. E. REYNOLDS, Los Angeles. *To examine the command* for nervous and mental diseases, Capt. T. J. BERGGREN, Coronado.

To Camp Kearney, Calif., base hospital, for instruction, Lieuts. C. N. MOONEY, Blue Lake; F. W. WATT, Sacramento; M. H. ARNOLD, San Diego; H. F. ADLER, San Francisco; H. E. TEBBETTS, Whittier.

To Denver, Colo., Lieut. J. W. NEVIUS, Los Angeles.

To Fort Oglethorpe for instruction, Capt. W. S. VAN DALSEM, San Jose.

To Fort Riley for instruction, Lieut. H. C. SMITH, Glendale.

To report to the commanding officer, Western Department, Capt. J. M. WARD, Oakland; Lieuts. E. G. BASHOR, Los Angeles; H. ABRONS, Napa.

To San Francisco, Calif., Letterman General Hospital, for instruction, Capt. W. A. RECKERS, Placerville; Lieut. J. S. MASON, Ventura.

Canal Zone

To Fort McPherson, Ga., Lieut. L. WENDER, Corozal.

Colorado

To Azalea, N. C., Capt. G. H. CATTERMOLE, Denver.

To Camp Dodge, Iowa, base hospital, for instruction, Lieut. I. C. MIERLEY, Denver.

To Camp Logan, Texas, Capt. D. C. GROVES, Olathe.

To Fort Oglethorpe for instruction, Capts. C. F. EAKINS, Brush; H. R. McGRAW, Denver.

To Fort Riley for instruction, Lieuts. L. W. SOLAND, Blanca; P. A. WATERS, Monte Vista.

To Whipple Barracks, Ariz., Capt. A. G. WALKER, Denver.

Connecticut

To Camp Joseph E. Johnston, Fla., Lieut. E. J. LYMAN, Hartford.

To Colonia, N. J., Lieut. R. C. PAINE, Thompson.

To Fort Oglethorpe for instruction, Lieut. J. J. TYNAN, Torrington.

To New Haven, Conn., Capt. H. W. FLECK, Bridgeport. Yale Army Laboratory School, for instruction, Lieut. C. T. BEACH, Hartford.

To New York, Neurological Institute, for instruction, Lieut. T. W. WORTHEN, Hartford.

District of Columbia

To Camp McClellan, Ala., base hospital, Lieut. C. B. CONKLIN, Washington.

Florida

To Camp Meade, Md., Lieut. B. H. SANCHEZ, Plant City.

To Fort Oglethorpe for instruction, Lieut. R. E. CHALKER, Live Oak.

Georgia

To Fort Oglethorpe for instruction, Lieuts. W. H. ALEXANDER, Blakely; H. H. BLAKE, Savannah.

Idaho

To Fort Riley for instruction, Capts. H. D. SPENCER, Idaho Falls; H. E. MELTON, Menan; Lieuts. H. J. SIMMONS, Blackfoot; A. A. NEWBERRY, Filer; G. T. PARKINSON, Rexburg.

To report to the commanding general, Western Department, Capts. E. H. FIELD, Jerome; C. P. STACKHOUSE, Sandpoint.

Illinois

To Camp Beauregard, La., base hospital, for instruction, Capt. S. G. WEST, Chicago.

To Camp Custer, Mich., Lieut. R. V. SPENCER, Chicago Heights.

To Camp Dodge, Iowa, base hospital, for instruction, Capt. F. J. LESEMAN, Chicago.

To Camp Grant, Ill., Capt. C. E. SCELETH, Chicago. Base hospital, for instruction, Lieuts. H. O. JONES, Chicago; R. O. HAWTHORNE, Monticello.

To Camp Pike, Ark., Lieuts. P. B. JOYCE, Chicago; J. P. O'NEILL, Highland Park. *To examine the command* for nervous and mental diseases, Capt. W. A. CROOKS, Peoria.

To Camp Sherman, Ohio, Lieut. E. W. MUELLER, Chicago.

To Camp Wheeler, Ga., base hospital, Lieut. E. A. STREICH, Chicago.

To Camp Zachary Taylor, Ky., Capt. B. F. FLANAGAN, Lieut. M. SOLOMON, Chicago. *To examine the command* for nervous and mental diseases, Lieut. A. H. WATERMAN, Chicago.

To Fort Des Moines, Iowa, Lieuts. R. B. KERSHAW, M. O'HEARN, Chicago.

To Fort Oglethorpe for instruction, Capts. S. W. SHURTZ, Champaign; F. H. BLAYNEY, R. C. CUPLER, F. P. MACHLER, A. W. McCLAVE, J. M. NICHOLSON, Chicago; G. STEELY, Danville; A. L. HAGLER, Springfield; Lieuts. F. C. BAECHT, Brussels; H. W. J. KOERPER, Buda; F. G. CARLS, E. S. CLEVELAND, C. H. CONNOR, W. S. CROWLEY, E. H. FLINN, A. W. GREGG, W. P. GUNN, H. C. HANSON, E. L. HESS, F. C. JACOBS, F. E. MILLER, J. H. MITCHELL, V. V. PISANI, H. C. RUNYAN, G. E. SANDSTEDT, F. M. SCHWARZEL, R. W. E. SPRENG, Chicago; B. L. VILNA, Cicero; C. O. BULGER, Greenfield; E. G. MERWIN, Highland;; E. F. SCHEVE, Mascoutah; W. L. COTTINGHAM, Paxton; M. T. EASTON, Peoria; C. T. KELL, Salem; J. G. MEYER, Springfield; T. G. KNAPPENBERGER, St. Joseph; A. H. HUNTER, Staunton; A. J. FROELICH, West McHenry.

To Fort Riley for instruction, Capts. C. G. DAVIES, Blue Island; S. WAYLAND, Chicago; E. L. DAMRON, Effingham; L. H. TATE, Galesburg; T. E. McCALL, Vienna; Lieuts. A. TRIPODI, Benld; J. H. GAFF, O. B. FUNKHOUSER, A. MAGNUS, Chicago; G. HENDERSON, Clay City; C. M. COOK, J. L. FUNKHOUSER, Danville; F. E. HAGIE, Elizabeth; R. D. FINCH, Flora; M. L. HARTMAN, Garden Prairie; R. L. WATSON, Joliet; C. E. ERICSON, Quincy; C. H. BOSWELL, Rockford; W. E. COULTER, Seneca; J. E. MARVEL, Waynesville; S. W. BROWNSTEIN, Westville.

To report to the commanding general, Central Department, Capt. T. R. FOSTER, Watseka; Lieuts. C. P. GIERALTOWSKI, Chicago; H. C. McMILLIN, Morton.

Indiana

To Camp Custer, Mich., Capt. H. W. SIGMUND, Crawfordsville.

To Camp Greene, N. C., to examine the command for nervous and mental diseases, Capt. H. D. PURDUM, Sykesville.

To Camp Zachary Taylor, Ky., Lieut. R. M. FUNKHOUSER, Evansville.

To Colonia, N. J., Capts. J. A. CRAIG, Gary; G. D. KIMBALL, Marion.

To Fort Oglethorpe for instruction, Capts. J. B. STALKER, Borden; L. C. BICE, Edinburgh; G. S. BEATY, French Lick; J. J. BOAZ, W. B. KITCHEN, O. C. NEIER, Indianapolis; J. E. BIRD, New Albany; Lieuts. E. D. HAVENS, Cicero; T. D. PETERS, Flora; J. P. CHRISTIE, F. W. MAYER, H. F. NOLTING, Indianapolis; E. C. CEKUL, La Otto; E. BARNUM, Manilla; G. V. CRING, Portland; O. T. BRAZELTON, Princeton; F. E. BASS, Shelbyville; D. E. MURRAY, Sheldon.

To Fort Riley for instruction, Capts. R. S. CHAPPELL, W. F. KELLY, Indianapolis; Lieuts. H. S. HIATT, Albion; S. M. COMPTON, Forest; A. H. HENDRICKS, W. H. LONG, Indianapolis; W. I. SCOTT, Kokomo; P. T. GRANT, Marengo; F. T. TYLER, New Albany.

To New Haven, Conn., Yale Army Laboratory School, for instruction, Lieut. R. E. COLE, Muncie.

To report to the commanding general, Central Department, Capt. W. G. HUFFMAN, Richmond; Lieut. J. F. DRAKE, Youngstown.

Iowa

To Camp Dodge, Iowa, base hospital, for instruction, Capt. C. E. GLYNN, Davenport; Lieut. J. A. CAHILL, Volga City. *To examine the command* for nervous and mental diseases, Lieut. F. J. VAN METER, Clarinda.

To Camp Shelby, Miss., base hospital, for instruction, Lieut. F. A. GILLETT, Fremont.

To Camp Wheeler, Ga., base hospital, Capt. J. L. SEABLOOM, Red Oak.

To Fort Oglethorpe for instruction, Lieuts. J. H. WOLFE, Iowa City; W. G. ROWLEY, Sioux City.

To Fort Riley for instruction, Capts. W. C. PHILLIPS, Clarinda; S. D. CARNEY, Sioux City; Lieuts. J. D. PAUL, Anamosa; D. F. HUSTON, Columbus Junction; G. D. CLEAVER, Council Bluffs; T. D. JACOBS, Morley; N. W. LABAGH, Mystic; W. C. CUMMINGS, Ryan.

To report to the commanding general, Central Department, Capt. J. O. GANOE, Ogden; Lieut. E. B. HADLEY, Waterloo.

Kansas

To Camp Dodge, Iowa, base hospital, for instruction, Capt. W. A. KLINGBERG, Elmo.

To Camp Logan, Texas, Capt. J. B. CARTER, Wilson.

To Camp Pike, Ark., base hospital, Lieut. R. G. SMITH, Marion.

To Fort Oglethorpe for instruction, Capts. J. S. McBRIDE, Lyon; H. E. NELSON, Sharon Springs.

To Fort Riley for instruction, Lieuts. C. F. ATWOOD, Abilene; W. W. SCOTT, Athol; G. E. MARTIN, Callison; A. W. CORBETT, Emporia; M. L. BRAKEBILL, Florence; F. L. DEPEW, Howard; D. J. MOORE, Idana; P. L. JONES, Lenexa; J. W. DEMAND, Lincolnville; H. W. DAVIS, Little River; F. R. BLAKE, Marquette; O. M. CASSEL, Norton; W. O. POSTON, Quenemo; T. A. O'CONNOR, C. S. WOLFE, Topeka; E. S. HAWORTH, Viola; E. A. MYERS, Wakefield.

Kentucky

To Camp Sevier, S. C., Lieut. T. J. ROBB, North Fork.

To Fort Oglethorpe for instruction, Capts. H. C. WHITE, Covington; H. L. McLEAN, Wilmore; Lieuts. H. V. JOHNSON, Georgetown; A. BACH, Jackson; T. M. DORSEY, I. N. KERNS, Louisville; L. O. PINDAR, Tyronne; W. G. SHACKLETTE, Valley Station.

To New York, Neurological Institute, Capt. E. T. BRUCE, Louisville.

To report to the commanding general, Central Department, Capt. W. T. McKINNEY, S. P. MYER, Louisville.

Louisiana

To Camp Beauregard, La., base hospital, for instruction, Lieut. E. L. SANDERSON, Shreveport.

To Camp Bowie, Texas, base hospital, Lieut. W. M. JOHNSON, New Orleans.

To Camp Custer, Mich., Lieut. P. C. SCHMIDT, New Orleans.

To Camp Jackson, S. C., base hospital, for instruction, Capt. R. E. Stone, New Orleans.

To Camp Joseph E. Johnston, Fla., Lieut. L. CHATELAIN, Hessmer.

To Fort Oglethorpe for instruction, Capts. E. F. BACON, E. L. LECKERT, New Orleans; Lieuts. J. K. SHEPPARD, Houghton; E. BLOCH, H. E. MILLER, E. S. SCHARFF, New Orleans.

Maine

To Camp Jackson, S. C., base hospital, for instruction, Capt. D. B. CRAGIN, Waterville.

To Camp Upton, N. Y., Lieut. C. G. FARRELL, Gardiner.

To Mineola, N. Y., Capt. S. E. FISHER, Portland.

To Norfolk, Mass., Lieut. K. B. STURGIS, Fairfield.

To report to the governor of Maine, as Medical Aide, Capt. H. F. BRADBURY, Norway.

Maryland

To Camp Lee, Va., for instruction, Capt. P. L. TRAVERS, Easton.

To Camp Meade, Md., Lieut. A. STEIN, Baltimore.

To Camp Wadsworth, S. C., to examine the command for nervous and mental diseases, Lieut. W. S. CARSWELL, Ruxton.

To Fort Oglethorpe for instruction, Capt. J. S. WILLOCK, Roland Park; Lieuts. F. H. CLARK, W. O. WHITTLE, W. F. ZINN, Baltimore; W. A. GRACIE, Cumberland; B. I. JAMISON, Emmitsburg.

Massachusetts

To Arcadia, Fla., Carlstrom Field, Lieut. W. D. STACEY, Boston.

To Camp Devens, Mass., Lieut. W. E. HUNT, Bridgewater. Base hospital, Capts. G. H. STONE, Boston; O. M. DEEMS, Springfield; Lieut. W. W. HENNESSEY, Salem. Base hospital, for instruction, Capt. D. P. O'BRIEN, New Bedford; Lieuts. T. A. DEVAN, L. E. PHANEUF, Boston.

To Camp Jackson, S. C., base hospital, Lieut. C. H. LAWRENCE, Jr., Boston.

To Camp Lee, Va., Capt. H. M. CHASE, Boston. Base hospital, for instruction, Capts. H. H. GERMAIN, Boston; G. M. SHEAHAN, Quincy. For instruction, Lieut. C. A. ORDWAY, Everett.

To Camp Meade, Md., Lieuts. A. R. CUNNINGHAM, Boston; H. KAPLOVITCH, Haverhill.

To Camp Upton, N. Y., Lieut. M. F. McMAHON, Worcester.

To Colonia, N. J., Capt. J. E. OVERLANDER, Springfield.

To Fort Oglethorpe for instruction, Capts. A. H. RING, Arlington Heights; S. F. CURRAN, L. B. MORRISON, Boston; W. B. YOUNG, East Cambridge; F. D. McALLISTER, Lawrence; S. S. ORR, West Lieuts. G. H. BINNEY, E. S. BISBEE, R. P. BONELL, W. E. CONNOLLY, J. G. HEGARTY, Z. A. MOLLICA, E. H. ROBBINS, J. L. SULLIVAN, Boston; J. D. TAYLOR, East Boston; W. H. SHER-

MAN, Graniteville; J. E. GRADY, Leominster; F. C. CASSIDY, Medford; C. SHANKS, New Bedford; G. A. WILKINS, Revere; E. A. GENEREAUX, Whitinsville; L. K. CROSS, Winchendon; J. P. CARROLL, Woburn; F. B. PUSKINIGIS, Worcester.

To Hoboken, N. J., Lieut. E. F. REGAN, Framingham.

To Lakewood, N. J., Lieut. T. E. BUCKMAN, Boston.

To Mineola, N. Y., Hazelhurst Field, for instruction, Capt. F. E. DOW, Northampton; Lieut. T. F. CAPELES, Haverhill.

To New Haven, Conn., Yale Army Laboratory School, for instruction, Capt. D. L. WILLIAMS, Boston; Lieuts. J. E. WATERS, Gardner; J. A. RUEL, Haverhill.

To report to the commanding officer, Northeastern Department, Capt. V. A. REED, Lawrence; Lieut. N. M. CROFTS, North Adams.

Michigan

To Camp Custer, Mich., Lieut. M. P. FISHER, Detroit. Base hospital, Capt. J. T. S. HAMILTON, Detroit; Lieut. P. VERMEULEN, Grand Rapids.

To Camp Zachary Taylor, Ky., base hospital, Lieut. C. S. KLOEPPEL, Detroit. Base hospital, for instruction, Lieut. E. I. CARR, Lansing.

To Colonia, N. J., Lieut. W. M. BURLING, Grand Rapids.

To Fort Oglethorpe for instruction, Capts. J. J. DELBRIDGE, Detroit; J. B. BROWN, Lavering; C. W. MERRITT, St. Joseph; Lieuts. W. S. CHAPIN, Ann Arbor; H. P. LAWRENCE, Bay City; A. L. HAIGHT, Crystal Falls; T. H. E. BEST, C. W. COURVILLE, R. S. MacKNIGHT, M. B. ROBINSON, Detroit; C. E. LONG, Grand Haven; V. L. OLER, Kearsarge; D. A. GALBRAITH, Lansing; G. F. LAMB, Pentwater; J. D. BRADFIELD, Portland; I. L. HUNT, Scottville; F. R. BURDENO, Sturgis.

To Fort Porter, N. Y., Lieut. F. C. BANDY, Newberry.

To report to the commanding general, Central Department, Capt. J. H. KIMBLE, Plymouth.

Minnesota

To Camp Custer, Mich., base hospital, for instruction, Lieut. T. L. CHAPMAN, Duluth.

To Camp Dodge, Iowa, base hospital, Capt. A. E. SMITH, Minneapolis.

To Camp Grant, Ill., base hospital, for instruction, Lieuts. F. F. MOREHOUSE, Owatonna; W. O. OTT, Rochester. For instruction, Capts. S. B. HAESSLY, Fairbault; I. SIVERTSEN, Minneapolis.

To Fort Oglethorpe for instruction, Capts. J. W. DOYLE, Minneapolis; W. W. HIGGS, Park Rapids; Lieuts. C. J. GOODHEART, Akeley; H. F. RAWLINGS, Eveleth; A. L. HAMEL, Minneapolis; G. A. MURRAY, Rochester.

To Fort Riley, Capt. T. THORDARSON, Minnesota. For instruction, Capt. W. P. LEE, Northfield; Lieuts. C. D. KOLSET, Benson; E. E. CRESS, Boyd; A. E. PHILLIPS, Delano; M. W. H. BECKMAN, H. LYSNE, C. L. RODGERS, Minneapolis.

Mississippi

To Camp Beauregard, La., Lieut. J. E. FURR, Belen.

To Fort Oglethorpe for instruction, Capts. J. S. JACKSON, Belzoni; J. E. WALLACE, Biloxi; Lieuts. R. E. GRAY, Bude; H. L. MAINS, Danvers; C. W. MITCHELL, Harkville; S. W. COLEY, Reid; W. D. COPELAND, Sandersville.

To report to the commanding officer, Southern Department, Capt. J. B. MOONEY, Scooba.

Missouri

To Camp Beauregard, La., Lieut. M. E. HAGERTY, St. Louis.

To Camp Dix, N. J., base hospital, Lieut. E. J. SCHISLER, St. Louis.

To Camp Dodge, Iowa, base hospital, Lieut. C. A. REVELLE, Kansas City.

To Camp Pike, Ark., Capt. W. R. SUMMERS, Springfield; Lieut. O. HOFMANN, Kansas City.

To Camp Shelby, Miss., base hospital, for instruction, Capt. E. L. DORSETT, St. Louis.

To Fort Oglethorpe for instruction, Capts. G. O. HAMMERSLEY, Campbell; E. P. PORTERFIELD, St. Louis; Lieuts. W. C. INGRAM, Browning; T. R. GAMMAGE, F. P. HERBST, Kansas City; P. L. PATRICK, Marceline; S. F. WEYGANDT, St. Louis.

To Fort Riley, Capt. H. L. REID, Charleston. For instruction, Capts. J. J. FARRELL, C. E. PAXON, Hannibal; J. S. SNIDER, Kansas City; F. L. McCORMICK, Moberly; T. A. ROSELLE, Palmyra; H. R. CLARK, Peirce City; W. C. PROUD, St. Joseph; S. T. BASSETT, C. N. GUHMAN, St. Louis; Lieuts. P. H. STOCKFLETH, Cameron; E. L. PARKER, Excelsior Springs; W. PIERCE, Forrest Park Heights; A. M. UNDERWOOD, Holstein; O. A. GROTE, Moberly; E. W. SULLIVAN, Osceola; C. D. OSBORNE, Otterville; H. H. FRANCIS, St. Joseph; J. DAVIE, P. A. ECK, A. A. WERNER, St. Louis; L. L. HENSON, West Eminence.

To report to the commanding officer, Central Department, Capt. M. B. AUSTIN, Brunswick; Lieut. W. H. ABER, Aullville.

Montana

To Fort Oglethorpe, Lieut. P. E. KANE, Butte. For instruction, Lieut. H. G. HARRIS, Poplar.

To Fort Riley for instruction, Lieut. W. B. SHORE, Red Lodge.

Nebraska

To Camp Dodge, Iowa, base hospital, for instruction, Lieut. O. H. HAHN, Hastings.

To Fort Oglethorpe for instruction, Lieuts. L. L. NELSON, Norfolk; L. A. DERMODY, Omaha; L. B. LAKE, Wausa.

To Fort Riley, Capt. W. R. McGREW, Omaha. For instruction, Capts. E. C. STEVENSON, Gothenburg; J. E. SIMPSON, Omaha; Lieuts. J. B. REDFIELD, North Platte; R. S. JOHNSTON, Omaha; J. R. LEIBEE, Polk; J. W. STOCKMAN, Red Cloud.

New Hampshire

To Colonia, N. J., Capt. G. H. PARKER, Hanover.

New Jersey

To Camp Dix, N. J., base hospital, Capt. W. S. BRANNER, Hoboken.

To Camp Meade, Md., Capt. O. B. DUNCAN, Paterson; Lieut. J. A. CONNELLY, Trenton.

To Fort Oglethorpe for instruction, Capts. H. ARBUCKLE, Boonton; J. V. BERGIN, Paterson; Lieuts. W. R. RIECK, Arlington; J. J. REASON, Garteret; E. W. MIERAU, Irvington; F. C. SHIPMAN, Jersey City; G. L. JOHNSON, Morristown; W. E. McCORMICK, Mount Vernon; J. J. SMITH, H. R. VAN NESS, Newark; W. E. WAKELEY, Orange; A. A. BUTTERFIELD, Passaic.

To Mineola, N. Y., Hazelhurst Field, for instruction, Capt. A. B. RUSSELL, East Orange.

To Plattsburg Barracks, N. Y., Lieut. M. A. CURRY, Greystone Park.

New Mexico

To Camp Cody, N. M., base hospital, Lieut. S. C. CLARKE, Albuquerque.

To Fort Riley for instruction, Lieuts. H. A. STROUP, Artesia; H. J. HOAG, Mora.

To report to the comanding general, Western Department, Lieut. E. S. FURAY, Lakewood, Southern Department, Lieut. C. W. GERBER, Las Cruces.

New York

To Boston, Mass., for intensive training, Lieut. F. W. SEWARD, Jr., Goshen.

To Camp Custer, Mich., base hospital, for instruction, Capt. J. HORNI, Brooklyn.

To Camp Devens, Mass., base hospital, for instruction, Lieuts. L. A. WYLIE, Harrison; J. W. GRAVES, Herkimer; R. S. COOPER, Syracuse.

To Camp Dix, N. J., base hospital, Capt. A. F. CHACE, New York.

To Camp Hancock, Ga., base hospital, Lieut. H. I. BERLOWE, New York. For instruction, Capt. S. B. THOMAS, Brooklyn.

To Camp Jackson, S. C., base hospital, for instruction, Capt. W. A. DOWNES, New York. For instruction, Major J. P. F. BURKE, Buffalo.

To Camp Joseph E. Johnston, Fla., Lieut. J. R. GLOBUS, Brooklyn.

To Camp Lee, Va., Lieut. F. E. DUBOIS, New York. Base hospital, for instruction, Capt. M. I. BLANK, New York; Lieut. C. W. SYMONDS, New York.

To Camp Logan, Texas, Lieut. L. MARCUS, Brooklyn.

To Camp McClellan, Ala., base hospital, Lieut. J. HEINE, New York.

To Camp Meade, Md., Lieuts. W. J. McGIBBON, Chatenugay; W. ORMISTON, Delhi; G. A. GORISSE, S. L. HASELTINE, New York.

To Camp Sevier, S. C., base hospital, Lieut. W. Z. JEROME, New York.

To Camp Sheridan, Ala., base hospital, Lieut. F. H. COOK, Middletown.

To Camp Sherman, Ohio, Lieuts. L. W. BURDICK, Maryland; W. C. TREDER, Scotia.

To Colonia, N. J., Capt. A. BOOKMAN, New York.

To Fort McPherson, Ga., Capt. R. L. WOOD, Lieut J. ROSENTHAL, Brooklyn.

To Fort Oglethorpe, Lieut. S. WEIL, New York. For instruction, Capts. L. H. FINCH, Amsterdam; J. B. KOPF, Brooklyn; B. J. BIXBY, Buffalo; J. E. CANFIELD, Herkimer; F. A. DEAL, T. L. HEIN, J. R. HUNTER, New York; T. D. BUCK, Rochester; T. F. COLE, Romulus; Lieuts. R. J. KNAPP, Amsterdam; C. L. WAKEMAN, Andes; H. H. LESEUR, Batavia; H. M. KENYON, Binghamton; H. BERKOWITZ, M. CANICK, M. GITTELSON, D. R. GROTEMTEIN, L. MAMELOK, Brooklyn; O. S. McKEE, A. L. WEIL, Buffalo; R. BRITTAIN, Downsville; S. T. HAMILTON, Elmira; G. C. ANDERSON, J. ARENA, F. E. BINGHAM, B. S. BRAKE, J. M. DOHERTY, P. J. FAGAN, I. HARTSHORNE, D. KATZ, M. J. LIPPMAN, J. M. LOBSENZ, M. T. MAXWELL, L. M. PEARLMAN, J. ROHR, S. SALADINO, D. SCHULMAN, New York; N. W. GETMAN, Oneonta; F. H. GODDARD, A. C. SCINTA, E. J. WENDEL, Rochester; A. T. LAWLESS, Syracuse; H. P. PECKHAM, Waterford.

To Hoboken, N. J., Capts. C. J. CARR, Buffalo; E. A. FRENCH, Rochester; Lieuts. R. ROBINSON, Lackawanna; M. M. ANDREWS, New York.

To Lakewood, N. J., Lieut. H. A. COHEN, New York.

To Mineola, N. Y., Hazelhurst Field, for instruction, Capt. F. H. LASHER, Brooklyn.

To New Haven, Conn., Yale Army Laboratory School, for instruction, Lieut. S. GITLOW, New York.

To Newport News, Va., Lieuts. L. E. KLINGON, J. MAYEROFF, New York.

To report to the commanding general, Eastern Department, Major E. W. PETERSON, New York.

To Rockefeller Institute for instruction in the treatment of infected wounds, Lieut. F. W. BISHOP, New York.

To Williamsbridge, N. Y., Capt. G. W. TONG, Brooklyn.

North Carolina

To Fort Oglethorpe for instruction, Lieuts. R. E. RHYNE, Gastonia; B. L. LONG, Glen Alpine; J. E. HOBGOOG, Thomasville.

To New Haven, Conn., Lieut. J. E. COCKE, Asheville.

North Dakota

To Camp Logan, Texas, base hospital, Lieut. F. A. BRUCHMAN, Minot.

To Colonia, N. J., Capt. W. H. BODENSTAB, Bismarck.

To Fort Oglethorpe for instruction, Lieut. H. A. BRANDES, Hebron.

To Fort Riley for instruction, Lieuts. C. A. PLATOU, Jr., Litchville; E. E. HAMILTON, New Leipsig; C. A. KERNER, Tuttle.

Ohio

To Camp Greene, N. C., base hospital, for instruction, Capt. H. L. BABCOCK, Waterville

To Camp Meade, Md., Lieut. T. G. McCORMICK, Portsmouth.

To Camp Sevier, S. C., Lieut. J. R. SPRAGUE, Athens.

To Camp Shelby, Miss., for instruction, Capt. R. B. DRURY, Columbus.

To Camp Sherman, Ohio, base hospital, for instruction, Lieut. J. T. LAWLESS, Jr., Toledo.

To Camp Wadsworth, S. C., base hospital, for instruction, Capt. J. McCLAIN, Coshockton.

To Camp Wheeler, Ga., base hospital, Lieut. E. B. MARKEY, Dayton.

To Camp Zachary Taylor, Ky., Lieut. C. N. WATKINS, Chattanooga.

To Fort Oglethorpe for instruction, Capts. C. E. TOWNSEND, Akron; R. E. HUGHSON, Bluffton; T. H. SHORR, Canton; D. S. HEYN, S. H. SMITH, Cincinnati; J. NEUBERGER, Cleveland; C.

WATSON, Findlay; B. L. JOHNSON, Kenton; J. B. McCORD, Oberlin; W. E. GAULT, Portsmouth; Lieuts. R. VAUGHEN, Cedar Mills; L. M. OTIS, Celina; J. A. DUFFEY, W. C. HERMAN, R. W. KASTING, R. W. SIMMONS, Cincinnati; D. J. BRYANT, W. H. HYDE, K. E. OCHS, I. S. OLSEN, Cleveland; E. L. HARNEY, A. B. LANDRUM, T. R. WILLIAMS, Columbus; H. N. CRANDALL, Conneaut; F. W. WATKINS, Defiance; E. D. HELFRICE, Galion; A. COBURN, Homer; F. F. FIELD, Meeker; H. I. BLOOD, Middletown; F. P. ATKINSON, Millersport; G. H. GALE, Newport; J. F. BLACK, Painesville; W. H. LEE, Plain City; G. C. McCREIGHT, Willard; R. W. RIGGS, Youngstown; D. J. MATTHEWS, G. W. McCORMICK, Zanesville.

To New Haven, Conn., Yale Army Laboratory School, for instruction, Lieuts. P. H. DORGER, Cincinnati; C. E. LITTLE, Logan.

To report to the commanding general, Central Department, Lieuts. F. M. HARRISON, Napoleon; G. B. KISTLER, Newcomerstown; E. J. KEHRES, Warrensville.

Oklahoma

To Camp Beauregard, La., Lieut. H. M. EVANS, Rush Springs.

To Camp MacArthur, Texas, base hospital, Lieut. E. A. ABERNETHY, Altus.

To Camp Travis, Texas, Lieuts. J. B. HAMPTON, Commerce; A. M. COOTER, Miami.

To Fort Oglethorpe for instruction, Lieut. J. C. WILLIAMS, Picher.

To Fort Riley for instruction, Capt. T. A. RHODES, Cherokee; Lieuts. F. P. ROBINSON, Agra; J. C. LUSTER, Davis; H. H. BISHOP, Dilworth; H. K. MILLER, Fairland; E. F. MILLIGAN, Geary; F. A. MILLER, Hartshorne; C. J. BARKER, Kaw; J. C. MATHENEY, Lindsay; A. R. MAVITY, Marlow; A. C. HIRSHFIELD Oklahoma City; F. H. NORWOOD, Prague.

Oregon

To report to the commanding officer, Western Department, Lieut. J. J. ROSENBERG, Portland.

Pennsylvania

To Camp Crane, Pa., Lieut. A. W. HOPPER, Bridgeville.

To Camp Dix, N. J., Lieuts. F. P. STONE, Philadelphia; A. J. MAYSELS, South Bethlehem.

To Camp Greene, N. C., base hospital, for instruction, Capt. C. BECKER, Philadelphia.

To Camp Jackson, S. C., base hospital, for instruction, Capt. F. S. MORRIS, Pittsburgh.

To Camp Lee, Va., Lieut. G. I. WINSTON, Reading. Base hospital, for instruction, Capt. C. I. WENDT, Pittsburgh.

To Camp Wheeler, Ga., base hospital, Lieut. J. C. RICKETTS, Pittsburgh.

To Colonia, N. J., Lieut. J. S. DIVEN, Philadelphia.

To Fort McPherson, Ga., Lieut. F. W. PATON, Bradford.

To Fort Oglethorpe for instruction, Capts. L. S. WALTON, Altoona; E. F. ARBLE, Carrolltown; C. E. IMBRIE, Cochranton; J. D. CALDWELL, Irwin; H. M. STEWART, Johnstown; H. M. FELTON, Pittsburgh; E. A. SWEENEY, Wilkes-Barre; Lieuts. J. R. BARTLETT, Bellefonte; G. G. ASH, Bradford; C. L. HARSHA, Canonsburg; V. J. MULVEHILL, Carrolltown; E. T. WILLIAMS, Danville; C. E. ALLISON, Elysburg; C. H. ASHTON, Franklin; J. G. STEELE, Galeton; O. C. REICHE, Hazelton; G. R. LYON, Heilwood; C. C. CUSTER, Johnstown; J. AARONOFF, Kemblesville; J. W. ALLEN, Monongahela; A. H. McANULTY, Nanty-Glo; A. M. ADAMS, E. C. COLLINS, W. V. MARSHALL, S. MOSS, C. S. PANCOAST, J. G. SILVERMAN, H. A. STEES, Philadelphia; F. B. EDMUNDSON, W. N. GOEHRING, J. GORFINKELL, P. J. HENNEY, W. H. THOMPSON, Pittsburgh; H. R. REED, L. G. SWEENEY, Scranton; L. M. HOLT, Shamokin; J. R. STEIN, Shenandoah; B. L. TINKER, West Middlesex; D. A. ATKINSON, West View; E. A. COSTELLO, Wilkes-Barre; J. C. FRYE, Williamsburg.

To Mineola, L. I., Hazelhurst Field, for instruction, Capts. M. B. FRANKLIN, J. K. KNORR, Jr., Philadelphia.

To New Haven, Conn., Lieuts. J. P. FRANTZ, Clearfield; A. EPSTEIN, Philadelphia. To Yale Army Laboratory School for instruction, Capt. A. B. WALLGREN, Pittsburgh; Lieut. D. A. GOODMAN, Old Forge.

To Newport News, Va., Capt. E. S. BRIGGS, Tidioute.

To report to the commanding officer, Eastern Department, Capts. E. H. GREEN, Mill Creek; W. H CARPENTER, Philadelphia.

Rhode Island

To Camp Dix, N. J., base hospital, for instruction, Lieut. E. M. PORTER, Providence.

To report to the commanding officer, Northeastern Department, Capt. R. H. R. SHAW, Providence.

South Carolina

To Camp Meade, Md., base hospital, for instruction, Capt. G. T. TYLER, Jr., Greenville.

To Fort Oglethorpe for instruction, Capt. W. M. GAILLARD, Georgetown; Lieut. J. W. TARRANT, Lynchburg.

South Dakota

To Fort Riley for instruction, Capts. J. F. D. COOK, Langford; R. P. FRINK, Wagner; Lieuts. I. U. VANGSNESS, Beresford, T. ARNOLD, Delmont; J. H. DOUPE, A. P. HAWKINS, Waubay.

To New Haven, Conn., Yale Army Laboratory School, Lieut. L. HOLTZ, Aberdeen.

Tennessee

To Camp Joseph E. Johnston, Fla., Lieut. H. L. ELLISON, Millington.

To Fort Oglethorpe for instruction, Lieuts. T. H. ELLIOTT, Chattanooga; C. W. RAIN, Knoxville; L. L. RICKS, Laconia; C. A. ALLEN, Memphis; E. W. PATTON, North Chattanooga; S. T. WOODRUFF, Pleasant View; G. W. SMITHERS, Rutledge; O. H. WILLIAMS, Savannah.

Texas

To Camp MacArthur, Texas, base hospital, for instruction, Lieut. J. B. NESTOR, Itasca.

To Fort Oglethorpe for instruction, Lieuts. C. W. WELLER, Austin; D. B. BEACH, Dodsonville; J. E. WILSON, Lancaster; J. T. HUTCHINSON, Lu Block.

To Fort Riley for instruction, Lieuts. C. M. PAYNE, Benford; C. D. SCAFF, Clarkesville; A. T. HAMPTON, Ferris; A. J. SHARP, Franklin; J. G. WHIGHAM, Walburg; C. P. JOHNSON, Whitewright.

To report to the commanding officer, Southern Department, Lieuts. T. H. WESTBROOK, Fort Worth; L. C. ROBERTS, Malone.

Utah

To Fort Riley for instruction, Capts. H. B. FORBES, Ogden; H. M. VANCE, Pleasant Grove; Lieut. S. J. ULMAN, Salt Lake City.

Vermont

To Fort Oglethorpe for instruction, Lieut. H. L. PIERCE, Swanton.

Virginia

To Camp Custer, Mich., Lieut. S. H. YOKELEY, Meadow View.

To Camp Greene, N. C., Lieut. A. S. BRINKLEY, Richmond. Base hospital, Lieut. F. H. SMITH, Abingdon. Base hospital, for instruction, Capt. R. S. FITZGERALD, Richmond.

To Fort Oglethorpe for instruction, Capts. E. J. NIXON, Petersburg; C. M. EDWARDS, Richmond; Lieuts. W. L. GANNAWAY, Abingdon; T. D. MOREWITZ, Newport News; J. H. MOORE, Pardee; J. E. SMITH, Petersburg; W. H. CRAIG, Richmond; B. E. TOPHAM, Roanoke; D. T. GOCHENOUR, Stuarts' Draft.

To Newport News, Va., Lieut. J. D. COLLINS, Portsmouth.

West Virginia

To Camp Wheeler, Ga., Lieut. N. P. YEARDLEY, Parkersburg.

To Fort Oglethorpe for instruction, Capt. D. M. RYAN, Talcott; Lieuts. H. O. VAN TROMP, French Creek; W. L. LINDER, Minden; R. W. WERNER, Parkersburg; I. C. W. FLING, Pullman; C. H. CLOVIS, Wheeling.

Washington

To Camp Kearney, Calif., Lieut. E. L. SMYTHE, Bremerton.

To Camp Lewis, Wash., base hospital, Capt. F. W. HILSCHER, Spokane. Base hospital, for instruction, Capts. O. L. ADAMS, Davenport; P. C. IRWIN, Seattle.

To report to the commanding officer, Western Department, Capts. B. D. HENRY, Endicott; S. B. HOPKINS, Spokane; Lieuts. C. A. RIEMCKE, North Yakima; R. HANSON, W. T. SCHWABLAND, Spokane.

Wisconsin

To Camp Custer, Mich., Lieut. E. R. DEBOTH, Green Bay. Base hospital, for instruction, Lieut. I. E. LEVITAS, Green Bay. *To examine the command* for nervous and mental diseases, Capt. W. T. KRADWELL, Wautosa.

To Camp Grant, Ill., for instruction, Capt. F. A. FORSBECK, Milwaukee.

To Fort Oglethorpe for instruction, Lieuts. H. P. BOWEN, Johnson Creek; R. E. FITZGERALD, M. L. NAHIN, Milwaukee; E. S. RYAN, Sheboygan.

To Fort Riley for instruction, Lieuts. J. M. KELLEY, Cato; E. CHARBONNEAU, W. E. HATCH, Superior.

Wyoming

To Camp Dodge, Iowa, base hospital, for instruction, Capt. L. P. DESMOND, Cheyenne.

To Fort Oglethorpe for instruction, Lieut. L. W. STOREY, Douglas.

To Fort Riley for instruction, Capt. J. P. MARKLEY, Laramie; Lieuts. T. B. TORJUSON, Lovell; D. C. ROSS, Upton.

ORDERS TO OFFICERS OF THE MEDICAL CORPS, U. S. ARMY

Alabama

Honorably discharged on account of physical disability existing prior to entrance into the service, Lieut. J. M. BELL, Eufaula.

Arizona

To Camp Crane, Pa., from Plattsburg Barracks, Capt. L. P. KAULL, Jerome. Evacuation Ambulance Company, from Fort Riley, Lieut. E. J. GOTTHELF, Jr., Tucson.

Arkansas

To Camp Shelby, Miss., from Camp Beauregard, Lieut. J. R. SMITH, Lewisville.

To Fort Riley for instruction, Lieut. C. WALLIS, Arkadelphia.

To *report to the commanding general,* Southern Department, from Camp Jackson, Major W. E. McLAIN, Argenta.

Honorably discharged on account of physical disability existing prior to entrance into the service, Lieut. J. C. HUGHES, Walnut Ridge.

California

To Camp Crane, Pa., Evacuation Ambulance Company, from Fort Riley, Capts. J. H. TITUS, Ontario; H. P. WILSON, Whittier; Lieut. W. L. YAGER, Ludlow.

To Leland Stanford University, Calif., to give orthopedic instruction, Capt. L. W. ELY, San Francisco.

To Washington, D. C., from San Francisco, Capt. S. L. HAAS, San Francisco.

Canal Zone

To Rockefeller Institute for instruction in the treatment of infected wounds, and on completion *to Lakewood, N. J.,* for instruction, from Fort Oglethorpe, Lieut. N. B. KUPFER, Ancon.

Colorado

To Camp Crane, Pa., Evacuation Ambulance Company, from Fort Riley, Capt. J. ATCHESON, Jr., Idaho Springs.

To Camp Dix, N. J., base hospital, from Camp Crane, Capt. E. G. GRIFFIN, Denver.

To Camp Jackson, S. C., base hospital, for instruction, from Washington, Major C. A. POWERS, Denver.

To Rockefeller Institute for instruction in the treatment of infected wounds, and on completion *to Camp Devens, Mass.,* base hospital, for instruction, from Fort Oglethorpe, Capt. C. J. LATTA, Haxtun.

Connecticut

To Camp Greene, Charlotte, N. C., base hospital, from Fort Oglethorpe, Lieut. E. S. COGSWELL, Hartford.

To Camp MacArthur, Texas, base hospital, from Camp Logan, Lieut. R. F. SCHOLL, New Haven.

To Colonia, N. J., and on completion *to Boston, Mass.*, Harvard Graduate School of Medicine, for instruction, from Fort Oglethorpe, Major L. W. BACON, New Haven.

To Hoboken, N. J., from Camp Sevier, Lieut. C. F. VERNLUND, Hartford.

To Norfolk, Mass., from Camp Devens, Lieut. M. J. SHEALEY, Derby.

Honorably discharged on account of physical disability existing prior to entrance into the service, Lieut. H. F. MOORE, Bethel.

The following order has been revoked: *To Hot Springs, N. C.*, for instruction, Lieut. L. G. BEARDSLEY, Bridgeport.

District of Columbia

To Camp Crane, Pa., from Camp Meade, Capt. H. F. W. WARDEN, Washington.

To Fort Des Moines, Iowa, from Fort Omaha, Capt. O. C. COX, Washington.

To Fort Oglethorpe for instruction, Lieut. C. E. YOUNG, Washington.

Florida

To Camp Lee, Pa., from Mays Landing, N. J., Major G. R. PLUMMER, Key West.

To Fort Oglethorpe, evacuation hospital, from Camp Joseph E. Johnston, Major G. E. HENSON, Jacksonville.

Georgia

To Camp Crane, Pa., from Walter Reed General Hospital, Capt. C. BARROW, Savannah. Base hospital, from Camp Custer, Capt. W. J. MATHEWS, Quitman.

To Camp Meade, Md., evacuation hospital, from Fort Oglethorpe, Capt. J. A. WHITE, Albany.

To Fort Oglethorpe for instruction, Lieuts. J. G. DEVANE, Adel; J. B. CARTER, Blundale.

Honorably discharged on account of physical disability existing prior to entrance into the service, Lieut. W. H. CLARK, La Grange.

Resignation of Major A. H. LINDORNE, Atlanta, accepted.

The following order has been revoked: *To Hampton, Va.*, Langley Field, Lieut. J. P. KENNEDY, Atlanta.

Illinois

To Camp Crane, Pa., base hospital, from Fort Oglethorpe, Lieuts. C. R. BENNER, C. J. CHALLENGER, Chicago; J. C. KASSMEYER, Durand; L. F. BOWMAN, Mount Carroll. Evacuation hospital, from Camp Zachary Taylor, Lieut. T. W. HAGERTY, Chicago.

To Camp Grant, Ill., from Fort Oglethorpe, Lieut. E. L. DALLWIG, Chicago.

To Camp Upton, N. Y., base hospital, from Camp Lee, Capt. H. B. THOMAS, Chicago.

To Camp Wheeler, Ga., from Fort Oglethorpe, Capt. C. H. SOLOMON, Chicago.

To Fort Oglethorpe, evacuation hospital, from Fort Riley, Lieut. F. C. FINK, Pleasant Plains.

To Hoboken, N. J., from Camp Beauregard, Lieut. W. C. COOK, Peoria; from Camp Lee, Lieut. E. C. PRATT, Kankakee. Base hospital, from Camp Dodge, Lieut. E. A. CORCORAN, Chicago.

To Washington, D. C., St. Elizabeth's Hospital, from Fort Sam Houston, Capt. C. A. BRINK, Apple River.

To Willoughby, Ohio, from Fort Oglethorpe, J. W. KAIL, Chicago.

Honorably discharged on account of physical disability incurred in line of duty, Capt. F. M. EDWARDS, Centralia. On account of physical disability existing prior to entrance into the service, Capt. C. C. CLARK, Lieut. A. I. EPSTEIN, Chicago.

The following order has been revoked: *To Fort Oglethorpe* for instruction, Capt. W. G. WHITE, Jonesboro.

Indiana

To Camp Colt, Pa., from Camp Grant, Capt. C. L. ROWLAND, West Point.

To Fort Moultrie, S. C., from Camp Wadsworth, Lieut L. O. SHOLTY, Wabash.

To Fort Oglethorpe for instruction, Lieut. R. B. T. SWEANY, Rockville.

To Mineola, N. Y., Hazelhurst Field, for instruction, from Vancouver Barracks, Lieut. C. C. ROZELLE, La Grange.

To Walter Reed General Hospital, D. C., from Fort Oglethorpe, Capt. A. W. LLOYD, Hammond.

Honorably discharged on account of physical disability existing prior to entrance into the service, Lieuts. D. HART, Montgomery; W. B. ASHBY, Oakland City.

Iowa

To Camp Colt, Pa., from Camp Grant, Lieut. C. A. MILLER, Nevinville.

To Camp Crane, Pa., base hospital, from Fort Oglethorpe, Capt. H. M. DECKER, Davenport. Evacuation Ambulance Company, from Fort Riley, Capts. S. A. HUBER, Charter Oak; H. D. MERENESS, Dolliver; Lieut. J. O. WEAVER, Shenandoah.

To Hoboken, N. J., base hospital, Capt. A. D. McKINLEY, Lieut. H. E. RANSOM, Des Moines.

Kansas

Honorably discharged on account of physical disability existing prior to entrance into the service, Capt. W. A. NIXON, Great Bend.

Kentucky

To Camp Crane, Pa., base hospital, from Fort Oglethorpe, Lieut. I. H. BROWNE, Winchester.

To Camp Sevier, S. C., from Fort McPherson, Capt. E. L. BUSBY, Lexington.

Honorably discharged on account of physical disability existing prior to entrance into the service, Capt. J. L. STILLINGS, Green Mount.

Louisiana

To Hoboken, N. J., from Camp Hancock, Capt. W. P. PORKIN, New Orleans.

Maine

To Hoboken, N. J., from Camp Devens, Lieut. F. E. ROWE, Augusta.

To Princeton, N. H., Princeton University, from Mineola, Capt. W. E. WHITNEY, Bangor.

Honorably discharged on account of physical disability existing prior to entrance into the service, Lieut. W. J. LEWIS, Freeport.

The following order has been revoked: *To Camp Crane, Pa.*, base hospital, from Camp Dix, Capt. D. W. WENTWORTH, Sanford.

Maryland

To Fort McPherson, Ga., from Camp Sevier, Capt. I. J. SPEAR, Baltimore.

To Hoboken, N. J., from Camp Meade, Capt. A. C. GILLIS, Baltimore.

To New York, Neurological Institute, for instruction, from Fort Oglethorpe, Capt. J. O. PURVIS, Annapolis.

To Rockefeller Institute for instruction in the treatment of infected wounds, and on completion *to Camp Lee, Va.*, base hospital, for instruction, from Fort Oglethorpe, Lieut. S. M. PILCHARD, Salisbury.

Honorably discharged, Lieut. J. TURNER, Baltimore.

Massachusetts

To Camp Abraham Eustis, Va., for duty, from Camp Devens, Capt. J. W. BOYD, Springfield.

To Camp Crane, Pa., mobile hospital, from Camp Morrison, Capt. W. E. HUNT, Malden.

To Fort McPherson, Ga., from Fort Oglethorpe, Capt. G. M. MASON, Boston.

To Mays Landing, N. J., from Northeastern Department, Lieut. V. S. MERRITT, Springfield.

To New Castle, Del., from Camp Dix, Capt. W. Y. FOX, Taunton.

To Newport News, Va., from Fort Oglethorpe, Lieut. F. S. LACZYNSKI, Holyoke.

To Norfolk, Mass., from Camp Devens, Lieut. H. R. FIEGE, Cambridge.

The following orders have been revoked: *To Camp Crane, Pa.*, from Walter Reed General Hospital, Lieut.-Col. F. B. LUND, Boston. *To Fort Hamilton, N. Y.*, from Camp Colt, Lieut. E. S. LEWIS, Princeton.

Michigan

To Camp Bowie, Texas, as orthopedic surgeon, from Fort Oglethorpe, Lieut. A. W. NEWITT, Detroit.

To New York, Neurological Institute, for instruction, from Fort Oglethorpe, Lieut. H. W. WILEY, South Haven.

The following order has been revoked: *To Fort Oglethorpe* for instruction, from Camp Logan, Capt. N. J. PIKE, Saginaw.

Minnesota

To Camp Beauregard, La., base hospital, from Lake Charles, La., Lieut. A. D. CORNIEA, St. Paul.

To Hoboken, N. J., base hospital, Capts. M. M. GHENT, M. C. WELCH, St. Paul.

Mississippi

The following order has been revoked: *To Camp Crane, Pa.*, base hospital, from Fort Oglethorpe, Capt. J. CRISLER, Jackson.

Missouri

To Camp A. A. Humphreys, Va., from Camp Grant, Lieut. C. T. EBER, St. Louis.

To Camp Crane, Pa., Evacuation Ambulance Company, from Fort Riley, Lieuts. F. P. RILEY, Clyde; J. C. CALDWELL, La Clede; D. C. PERRY, Mound City; D. A. SEIBERT, Washington.

To Camp Sevier, S. C., base hospital, Capt. J. S. LICHTENBERG, Kansas City.

To Fort Des Moines, Iowa, from Fort Oglethorpe, Capt. T. G. ORR, Kansas City.

To Hoboken, N. J., from Camp Upton, Capt. W. G. JONES, Lincoln. Base hospital, from Fort Sheridan, Major J. C. MORFIT, St. Louis.

To Rockefeller Institute for instruction in the treatment of infected wounds, and on completion *to Camp Dix, N. J.*, base hospital, for instruction, from Fort Oglethorpe, Capt. C. H. VAN RAVENSWAAY, Boonville.

Honorably discharged on account of physical disability existing prior to entrance into the service, Lieuts. F. A. HUDSON, Buffalo; T. E. CHAPMAN, Joplin.

Resignation of Capt. V. B. JANES, Cameron, accepted.

Montana

To Hoboken, N. J., from Camp Wadsworth, Lieut. A. C. KNIGHT, Butte.

Nebraska

To Camp Crane, Pa., Evacuation Ambulance Company, from Fort Riley, Capts. B. M. DEARDORF, Clatonia; E. I. WHITEHEAD, Holdrege.

To Hoboken, N. J., from New Haven, Lieut. C. M. HYLAND, Omaha.

To Mineola, N. Y., Hazelhurst Field, for instruction, from Vancouver Barracks, Capt. O. A. BRITTELL, Belgrade.

New Hampshire

To Fort Oglethorpe, base hospital, from Fort Sill, Major N. E. GUILLET, Manchester.

New Jersey

To Camp Crane, Pa., from Fort McHenry, Capt. J. L. FEWSMITH, Newark.

To Camp Lee, Va., base hospital, for instruction, Lieut. M. KUMMEL, Harrison.

To Lawrenceville, N. J., Milbank Farms, from Camp Devens, Lieut. C. BROWNE, Princeton.

Resignation of Capt. W. H. SLOCUM, Long Branch, accepted.

The following order has ben revoked: *To Camp Crane, Pa.*, base hospital, from Camp Lee, Lieut. J. L. FARDEN, Irvington.

New York

To Camp Beauregard, La., to examine the command for nervous and mental diseases, from Fort Oglethorpe, Lieut. J. RESNIK, New York.

To Camp Crane, Pa., from Camp Sheridan, Lieut. S. S. FRIEDMAN, New York; from Fort Oglethorpe, Capt. J. J. SINNOTT, Mount Vernon. Base hospital, from Fort Oglethorpe, Capt. C. W. PERKINS, New York; from New York, Capt. E. C. KOENIG, Buffalo.

To Camp Dix, N. J., base hospital, for instruction, Lieut. J. M. SCHAFFER, New York.

To Camp Kendrick, N. J., from Fort Oglethorpe, Capt. J. S. PARKER, White Plains.

To Camp Meade, Md., from the Surgeon-General's Office, Lieut. F. N. POTTS, Buffalo.

To Camp Upton, N. Y., from Walter Reed General Hospital, Lieut. R. G. FOWLER, Buffalo.

To Camp Wheeler, Ga., from Fort Oglethorpe, Capt. L. B. MOUNT, Albany.

To Colonia, N. J., from Fort Oglethorpe, Capt. E. ALTMAN, New York.

To Fort Oglethorpe for instruction, from Baltimore, Lieut. L. H. WHEELER, Lockport.

To Hoboken, N. J., from Camp Dix, Lieut. R. W. MOODY, Middletown; from Camp Sherman, Lieut. G. R. STALTER, Troy.

To Mineola, N. Y., Hazelhurst Field, for instruction, from Vancouver Barracks, Lieut. G. BERGER, Port Chester.

To New Haven, Conn., Yale Army Laboratory School, for instruction, Lieut. R. E. PERSONS, East Durham.

To Newport News, Va., from Fort Oglethorpe, Lieut. W. MOEHLE, Brooklyn.

To Walter Reed General Hospital, D. C., from Camp Devens, Lieut. S. DANZER, Brooklyn.

Honorably discharged on account of physical disability existing prior to entrance into the service, Capt. G. T. WILSON, Hoosick Falls.

North Carolina

To Camp Lee, Pa., from New Castle, Lieut. R. T. UHLS, Franklinton.

North Dakota

To Camp Crane, Pa., from Camp Grant, Lieut. W. H. WITHERSTINE, Grand Fork. Evacuation Ambulance Company, from Fort Riley, Lieut. H. VAN DE ERVE, Sherwood.

Ohio

To Camp Beauregard, La., from Fort Oglethorpe, Capt. J. A. LYTLE, Cleve; Lieut. E. HUFFER, Milford Center.

To Camp Custer, Mich., from Camp Grant, Lieut. R. A. DALBEY, Youngstown.

To Camp Grant, Ill., from Fort Oglethorpe, Lieut. A. E. MILLS, New Boston.

To Camp Greene, N. C., base hospital, from Fort Oglethorpe, Lieut. J. H. VORHES, Columbus.

To Denver, Colo., from Fort Riley, Capt. E. A. BAKER, Clyde.

To Fort Monroe, Va., from Camp Dix, Capt. C. D. HOY, Columbus.

To Mineola, N. Y., Hazelhurst Field, for instruction, from Vancouver Barracks, Lieut. V. T. SCOTT, Clarksburg.

To New Haven, Conn., Yale Army Laboratory School, for instruction, from Fort McPherson, Lieut. P. A. MURR, Galion.

To report to the governor of the Panama Canal, Lieut. L. W. GORTON, Cincinnati.

To Rockefeller Institute for instruction in the treatment of infected wounds, and on completion *to Camp Dix, N. J.*, base hospital, for instruction, from Fort Oglethorpe, Lieut. G. F. BARNETT, Painesville.

Honorably discharged on account of physical disability existing prior to entrance into the service, Lieut. A. F. SNELL, Jr., Cincinnati.

The following order has been revoked: *To Fort Oglethorpe* for instruction, Major C. A. L. REED, Cincinnati.

Oklahoma

To Camp A. A. Humphreys, Va., from Camp Grant, Lieuts. B. W. BAKER, Cloudchief; F. MOSLEY, Millerton.

To Camp Crane, Pa., Evacuation Ambulance Company, from Fort Riley, Capt. K. L. COLLEY, Bigheart.

To Fort Hamilton, N. Y., from Camp Grant, Lieut. A. S. SPANGLER, Pauls Valley.

To Fort Riley for instruction, Lieut. A H. LARSKOW, Claremon.

Honorably discharged, Capt. H. D. SHANKLE, Hastings. On account of physical disability existing prior to entrance into the service, Lieut. R. A. WORKMAN, Woodward.

Oregon

To Camp Crane, Pa., Evacuation Ambulance Company, from Fort Riley, Lieut. H. H. HUGHES, Gresham.

To Camp Jackson, S. C., base hospital, from Fort Oglethorpe, Capt. H. G. PARKER, Portland.

Pennsylvania

To Camp Colt, Pa., from Camp Dix, Lieut. F. D. LOHR, Derry.

To Camp Crane, Pa., from Camp Custer, Capt. W. F. ROSS, Aspinwall; from Fort Oglethorpe, Capt. J. B. ROGERS, Pottsville.

To Camp Gordon, Ga., base hospital, from Fort Oglethorpe, Lieut. R. L. ANDERSON, Pittsburgh.

To Camp Meade, Md., evacuation hospital, from the Surgeon-General's Office, Capt. W. J. EZICKSON, Philadelphia.

To Fort Oglethorpe, base hospital, from Fort McPherson, Lieut. J. O. BOWER, Wyncote.

To Hoboken, N. J., from Camp Meade, Lieut. P. K. HELLER, Dixmont.

To Newport News, Va., from Fort Oglethorpe, Lieut. L. LASDAY, Pittsburgh.

To New York, Neurological Institute, for instruction, Lieut. M. McCUTCHEON, Philadelphia.

To Richmond, Va., from Camp Dix, Capt. J. M. TIMMONS, West Alexander.

To Rockefeller Institute for instruction in the treatement of infected wounds, and on completion to Camp Meade, Md., base hospital, for instruction, from Fort Oglethorpe, Capt. W. T. ELLIS, Jr., Philadelphia.

Honorably discharged on account of physical disability existing prior to entrance into the service, Capt. W. S. RUCH, Carlisle; W. A. LAROSS, McDonald; Lieut. W. R. McCLELLAN, Garrett.

Resignation of Lieut. E. P. DAVIS, Philadelphia, accepted.

South Dakota

To Fort Riley for instruction, Lieut. W. E. DONAHOE, Sioux Falls.

To Hoboken, N. J., base hospital, Lieut. G. E. VAN DEMARK, Sioux Falls.

Tennessee

To Camp Crane, Pa., evacuation hospital, from Fort Oglethorpe, Capt. J. H. KING, Nashville.

To report to the commanding general, Central Department, from Fort Riley, Lieut. E. C. MASON, Bon Air.

Honorably discharged on account of physical disability existing prior to entrance into the service, Lieut. O. M. LATEN, Memphis.

Texas

To Camp Crane, Pa., from Camp MacArthur, Major W. M. WOLF, San Antonio; from Camp McClellan, Capt. I. A. WITHERS, Fort Worth. Evacuation Ambulance Company, from Fort Riley, Lieut. O. HUFF, Castell.

To Camp Hancock, Ga., base hospital, from Fort Oglethorpe, Lieut. S. ISRAEL, Houston.

To Camp McClellan, Ala., base hospital, from Corpus Christi, Lieut. H. F. WILKINS, Fort Worth.

To Fort Oglethorpe for instruction, Lieut. L. H. LANIER, Texarkana.

To Newport News, Va., from Fort Oglethorpe, Capt. G. F. ST. JOHN, Harriman.

To report to the commanding general, Southern Deparment, Lieut. E. A. BENBOW, Luling.

To Walter Reed General Hospital, D. C., from Fort Oglethorpe, Lieut. R. E. HILBURN, Antelope.

Honorably discharged on account of physical disability existing prior to entrance into service, Capts. J. L. WOMACK, Edna; J. A. HARDY, El Paso; Lieut. J. A. MOORE. Jourdanton.

Utah

Honorably discharged on account of physical disability existing prior to entrance into the service, Lieut. E. A. WEYMULLER, Geneva.

Virginia

To Camp Crane, Pa., base hospital, from Fort Oglethorpe, Capt. P. W. BOYD, Winchester.

To Fort Benjamin Harrison, Ind., from Fort Oglethorpe, Capt. M. C. SYCLE, Richmond.

To Fort Monroe, Va., from Camp Lee, Lieut. M. GROVEHAGEN, Richmond.

To Hoboken, N. J., evacuation hospital, from Camp Pike, Lieut. E. M. HICKS, Jr., Roanoke.

Washington

To Camp Crane, Pa., Evacuation Ambulance Company, from Fort Riley, Capt. F. M. CROSBY, Kennewick.

To Camp Dodge, Iowa, base hospital, from Fort Oglethorpe, Capt. L. B. BALDWIN, Seattle.

To Mineola, N. Y., Hazelhurst Field, for instruction, from Vancouver Barracks, Lieut. J. D. BARNWELL.

West Virginia

Honorably discharged on account of physical disability existing prior to entrance into the service, Lieut. W. E. WHITESIDE, Harrisville.

Wisconsin

To Camp Crane, Pa., Evacuation Ambulance Company, from Fort Riley, Capt. E. A. KETTERER, Montford.

To Newport News, Va., from Fort Oglethorpe, Lieut. W. J. MURPHY, Milwaukee.

Honorably discharged, Lieut. M. A. FRONEY, Racine. On account of physical disability existing prior to entrance into the service, Capt. A. M. FOSTER, Racine.

Wyoming

To Camp Crane, Pa., Evacuation Ambulance Company, from Fort Riley, Lieut. W. LOWE, Sunrise.

To Fort Oglethorpe for instruction, Major E. M. TURNER, Laramee.

ORDERS TO OFFICERS OF THE UNITED STATES PUBLIC HEALTH SERVICE

Sen. Surg. G. A. Magruder, proceed to Washington, D. C., for conference regarding venereal disease control.

Surg. W. C. Billings, proceed to various cities in state of California to investigate the public health value of certain contemplated improvements.

Surg. E. A. Sweet, proceed to certain points in the states of North Dakota, South Dakota, Colorado, Nebraska and Kansas for conference regarding measures for influenza control.

Passed Asst. Surg. W. M. Jones, proceed to League Island Navy Yard for inspection of repairs for steamer *Neptune*.

Asst. Surg. R. E. Dyer, proceed to Englewood, New Jersey, and assume charge of Service operations in extra-cantonment sanitation.

Asst. Surg. M. C. Edmunds, relieved from further duty in the District of Columbia and proceed to Madison, Wis., for duty in measures for the control of influenza.

Acting Asst. Surg. Orlando Ducker, proceed to Richmond, Va., for duty in control of influenza.

Acting Asst. Surg. John W. Goltra, proceed to Elkins, W. Va., for duty in connection with the control of influenza.

Acting Asst. Surg. M. D. Hollis, proceed to Tampa Bay Quarantine Station and assume charge of the Service.

Acting Assst. Surg. J. T. McDonald, proceed to Kalawao, Hawaii, for the purpose of supervising leprosy investigation at that place.

Acting Asst. Surg. A. J. McLaughlin, proceed to Lincoln, Neb., to address the druggist convention at that place.

Acting Asst. Surg. Evelyn G. Mitchell, proceed to Harrisburg, Pa., for duty in connection with the control of influenza.

Acting Asst. Surg. B. F. Roberts, proceed to Madison, Wis., for duty in connection with the control of influenza.

Acting Asst. Surg. Julius Schiller, proceed to Harrisburg, Pa., for duty in the control of influenza.

Pharm. F. S. Goodman, proceed to the Marine Hospital, Louisville, Ky., for duty.

San. Engr. H. W. Streeter, proceed to Bethlehem, Pa., for the investigation of public health needs of certain contemplated improvements.

Medical News

(Physicians will confer a favor by sending for this department items of news of more or less general interest; such as relate to society activities, new hospitals, education, public health, etc.)

CALIFORNIA

Masks Compulsory.—During the height of the influenza epidemic in San Francisco in the latter part of October, by a proclamation of Mayor Rolph all citizens were required to wear masks in all places where they come in contact with others, whether on the street or on the inside of business or other places. Strict orders were given to the police to enforce the regulation.

ILLINOIS

Correspondence Schools Closed.—The International College of Osteopathy, the Columbia College of Chiropractic and the Illinois College of Somapathy, correspondence schools, heretofore located at Elgin, are reported to have closed and to be about to surrender their charters.

Physician Gives Home for Negroes.—Dr. William E. Quine, Chicago, is reported to have deeded his residence at 3160 Indiana Avenue, to the Chicago Home Missionary and Church Extension Society of the Methodist Episcopal Church, to be used as a social center for negroes.

Illegal Practitioner Fined.—A raid on one of the offices and medical museums said to be backed by Emil Hellisher, Hammond, Ind., was made at Joliet, recently. M. A. Chaiken, assistant registered pharmacist, is said to have been fined $75 and costs for practicing medicine without a license.

Personal.—Dr. H. Gideon Wells, Chicago, is leaving in a few days for the Balkan States, as a member of the Balkan Commission of the American Red Cross.——Dr. Graham M. Lisor, East Moline, formerly a member of the staff of the Elgin State Hospital, has been appointed superintendent of the St. James (Minn.) Hospital and Sanitarium.——Lieut.-Col. Philip Schuyler Doane, M. C., U. S. Army, Chicago, head of the Health and Sanitation Division, Industrial Relations Group, U. S. Shipping Board, Emergency Fleet Corporation, will, it is reported, sail for France, next month, to assume command of an evacuation hospital.——Lieut.-Col. Edmund J. Doering, M. C., U. S. Army, Chicago, is reported to have been appointed district medical officer, Personnel Branch, Operations Division, of the General Staff.

INDIANA

License Revoked.—The license to practice medicine in Illinois, of Dr. Edward D. Porter, Indianapolis, is said to have been revoked, October 15.

Personal.—Dr. Charles C. Morris, Rockville, is reported to be critically ill with influenza.——Dr. Hugh D. Wood, Angola, is said to be seriously ill at his home.

Mental Hygienists to Meet.—The third annual meeting of the Indiana Society of Mental Hygiene will be held in Indianapolis, December 16, under the presidency of Dr. William T. Bryan, Bloomington, president of the State University.

MARYLAND

Influenza Ban Lifted.—The influenza ban has been entirely lifted in Baltimore by the health department and schools and colleges have been reopened. The cases reported on the first had dropped to fifty-eight and the deaths to forty-two, and conditions, it is felt, will be normal within the next day or so.

Hospital Train at Chambersburg.—At the request of Surg.-Gen. Rupert Blue of the United States Public Health Service, the Maryland Council of Defense has sent its hospital train to Chambersburg, Pa., where influenza is reported as being very prevalent. The train has been at Cumberland and other points in western Maryland. Conditions throughout the state have improved to such an extent that the train is no longer needed in the counties.

Personal.—Capt. George L. Stickney, Baltimore, of the U. S. Army Medical Corps, formerly from Baltimore, who was severely injured at the battle of Soissons, has entirely recovered and has been transferred to new duty. He is now serving in a replacement camp with U. S. Military Hospital No. 47.——Rear Admiral Albert M. D. McCormick, veteran medical officer at the Naval Academy, has received orders to proceed to duty with the naval forces overseas. Admiral McCormick has been on duty at Annapolis almost continuously for more than a score of years.

MASSACHUSETTS

Increased Pay for Medical Examiners.—The legislative action authorizing the city of Boston to increase the salaries of medical examiners, George B. Magrath and Timothy Leary and their assistants, was accepted by the council, September 23. By the provision of this act, Drs. Magrath and Leary will receive a salary of $6,000 instead of $4,500 as heretofore.

Personal.—Dr. John J. Carroll, Holyoke, acting assistant surgeon, U. S. P. H. S., has been appointed chief of the subdivision of venereal diseases of the state department of health, to succeed Major Alec Nicol Thomson, who was placed in charge of the work of correlating the efforts against the venereal diseases in behalf of both the Army and Public Health Service.——Dr. Lily Owen B. Burbank, East Bridgewater, has been appointed director of educational work for the women of the subdivision of the venereal disease of the state department of health.——Dr. Esther M. E. Sundelor, Fall River, roentgenologist at the Truesdale Hospital and Clinic, Fall River, has returned to her work after a summer spent at St. Anthony Hospital, Labrador.——Dr. Charles H. Winn, Roxbury, Boston, has been appointed high medical examiner of the Massachusetts Catholic Order of Foresters.

Massachusetts Health Committee.—During the summer there was organized a health committee to conduct a health campaign in the state, under the auspices of Dr. Eugene R. Kelley, state commissioner of health. This committee will work along educational lines and will carry on a vigorous campaign of lectures, exhibits, newspaper publicity and circular work. The committee will act in advisory capacity to less experienced organizations, and will aim to be "a clearing-house for public health ideas." The officers of the committee are Dr. Eugene R. Kelley, chairman; Miss Gertrude W. Peabody of the Child's Welfare Department, Council of National Defense, treasurer; Prof. Charles E. Bellatty of Boston University, director of publicity; Bishop William Lawrence, representing the Society of Social Hygiene; Dr. Edward Reynolds, Boston, director of the American Society for the Control of Cancer; Dr. George M. Kline, Boston, director of the Massachusetts Committee on Mental Disease; Dr. Vincent Y. Bowditch, Boston, president of the Massachusetts Anti-Tuberculosis League, and Dr. Richard M. Smith, Boston, member of the Child Conservation Committee of the state department of health. Funds have been made available to meet all expenses of the work, which began in July. Dr. Edward Reynolds is chairman of the board of directors. The headquarters of the committee are at 525 Boylston Street, Boston.

MICHIGAN

Influenza Prophylaxis.—It was reported from Flint, October 26, that at the Michigan School for the Deaf, with 300 pupils and fifty employees, not a single case of influenza had developed on account of the fact, it is believed, that every person connected with the institution was required to wear a face mask following the order of the board of health, October 17. No other preventive measure was used.

MISSOURI

Personal.—Dr. Henry L. Wolfner, St. Louis, has been elected president of the St. Louis Board of Education.

Advocate Use of Serum.—The St. Louis Medical Society, October 23, appointed Dr. C. H. Smith, assistant health commissioner, Elsworth S. Smith, William Engelbach, George Ives, and Charles W. Schery, a committee to further the use of the new serum to prevent deaths from pneumonia in influenza cases.

Arrest of Physicians Ordered.—Orders are said to have been issued by the St. Joseph Board of Health, October 24, directing the city health officer, Dr. Hasbrouck De Lamater, to swear out a warrant for the arrest of Dr. Clayton F. Imus, charged with failing to report a case of influenza, and Dr. Reinhold Willman, charged with tearing a quarantine sign from a house without permission from the board of health.

State Board Election.—At the annual meeting of the state board of health, held October 16, Dr. William A. Clark, Jefferson City, was elected president; Dr. Andrew W. McAlester, Columbia, vice president, and Dr. George H. Jones, secretary (reelected).——The board decided that the precautionary measures instituted on account of the epidemic of influenza should be continued for an indefinite period.——The board has withdrawn its recognition of the St. Louis College of Physicians and Surgeons.

St. Joseph Physicians Form Unit.—Dr. William J. McGill, St. Joseph, has organized and will direct a Naval Station Unit, the personnel of which is composed of Lieut.-Com. William J. McGill, director; Lieut.-Com. Clarence A. Good, chief of the medical section; Lieut. L. Robert Forgrave, eye, ear, nose and throat specialist; Lieut. Julius S. Weingart, Des Moines, Iowa, specialist in laboratory and pathology. This unit will serve either on hospital ships or in base hospitals in this country or overseas. Additional assistants will be assigned if needed by the Surgeon-General, and nurses will be furnished by the American Red Cross.

NEW YORK

Diphtheria in Troy School.—There has been an outbreak of diphtheria among the 700 students of the Rensselaer Polytechnic Institute, who are enrolled in the Students' Army Training Corps. The Schick test is being applied to every student, and those who are found susceptible will be immunized.

New York City

Personal.—Dr. Charles H. Chetwood, former head of the department of urology of the New York Polyclinic Hospital, has been appointed consulting surgeon to the French Hospital.

Government Takes City Hospital.—The federal government is about to take over North Brother Island from the city and will maintain the Riverside Hospital as a military institution. The Riverside Hospital has accommodations for 1,000 patients.

Society Rejects Council Report.—Members of the Kings County Medical Society at a meeting, held October 15, are reported to have refused to accept a recommendation of the council of the society that the investigation of Dr. James P. Warbasse be dropped, and to have voted to accept a report that the charges against the physician were well founded.

National Committee for the Prevention of Blindness.—This organization will hold its annual meeting, November 26, at 8:30 p. m., at the New York Academy of Medicine, New York City. The chief speaker of the occasion will be Lieut.-Col. James Bordley, M. C., U. S. Army, Baltimore, whose subject will be "The Government and Red Cross Work for Blinded Soldiers."

OHIO

Smallpox.—At Elyria, October 26, there were nineteen houses under quarantine on account of smallpox, and the total number of cases in the city was twenty-six.

Illegal Traffickers in Drugs Punished.—October 23, Drs. George S. Iddings, T. A. Harris, Horace C. Bliss, and Miss Sarah Wilkins, a nurse, all of Cleveland, were charged with unlawful traffic in morphin and other drugs. Dr. Iddings is said to have pleaded guilty and sentenced to pay a fine of $500 and to thirty days imprisonment in jail; in the case of Dr. Harris a fine of $100 and costs and imprisonment for thirty days was held in abeyance pending a hearing of a *motion in mitigation*; a fine of $50 and costs in the case of Miss Wilkins was suspended; and in the case of Dr. Bliss, who pleaded not guilty, the case was continued until November 12.

Personal.—Dr. Adam W. Montague, receiving physician at the Cincinnati General Hospital, has resigned.——Dr. Ira H. Hawes, Arcanum, sustained serious injuries by the overturning of his automobile near Ithaca, October 20.——Dr. Daniel Heimlich, Cleveland, is ill with pneumonia at Mt. Sinai Hospital.——Dr. Foster D. Keiser, Tippecanoe City, is reported to be ill with pneumonia, following influenza, at the home of his brother in Piqua.——Dr. William C. Coultrap, Columbus, is reported to be critically ill with influenza at Mt. Carmel Hospital.——Dr. Roscoe R. Kahle has been appointed by the board of administration consulting surgeon to fill in for major surgery in any of the state institutions.——Dr. Oscar M. Craven, District Physician for the Cincinnati Health Department, has been appointed assistant health officer.——Dr. Carrie A. Richeson, Bellefontaine, has been elected secretary of the Logan County Medical Society to fill the unexpired term of Dr. Guy J. Kent, deceased.

PENNSYLVANIA

Personal.—Dr. Frank C. S. Blessing, Pittsburgh, is reported to be ill with pneumonia.——Dr. Edwin S. Dorworth, Bellefonte, is reported to be critically ill as the result of a cerebral hemorrhage.

Influenza Hospitals Opened.—The Mid-Valley Emergency Hospital, Olyphant, was opened to receive patients, October 17. Dr. Frederick L. Van Sickle, Olyphant, is in charge of the institution.——An emergency hospital for Conshohocken was opened in the Conshohocken Baptist Church, October 14, with Dr. George N. Highley in charge.

Philadelphia

Personal.—Dr. Harry Lowenburg has recovered from his recent illness and has resumed practice.——Dr. Edward Martin has resigned as John Rhea Barton professor of surgery in the University of Pennsylvania, and Dr. John B. Deaver has been elected his successor.——Dr. Allen J. Smith has been elected dean of the Medical School of the University of Pennsylvania.

Good Work in Influenza Epidemic.—The College Hospital of the Woman's Medical College has just closed its emergency hospital, established in cooperation with the Sun Shipbuilding Company during the influenza epidemic. The hospital was located on the river front just behind the transport docks.——The three upper college classes were mobilized for hospital service in the first days of the epidemic, and it was therefore possible to run the main college hospital to its full capacity with special wards equipped in the gymnasium, together with the emergency hospital in the poorest quarters of the city. Senior students were also sent as aids to physicians in the more severely stricken parts of Philadelphia. Hospital aids trained in the wards of the hospital during the previous winter together with other volunteers gave needed relief to regular nurses and evening auto trips provided by the Red Cross of Cynwyd reduced the morbidity and mortality among the nursing staff to a minimum. Two women ambulance drivers maintained the service night and day throughout the epidemic.

Cooperation of Medical Students in the Epidemic of Influenza in Philadelphia.—At the height of the influenza epidemic, October 2, at the request of Major Griffith, military commandant at the University of Pennsylvania, Dr. H. C. Wood, Jr., professor of pharmacology and therapeutics, organized an influenza emergency hospital, at first to take care of the students in the university who became ill and who could not be admitted to other hospitals on account of their crowded condition. The hospital was opened in a fraternity house which was being prepared as a barracks for the Student Army Training Corps. This hospital was made ready within twenty-four hours and was soon filled, on account of the rapid increase in the number of cases at the university and throughout the city. October 6, a call was issued for all third and fourth year medical students to report to the hospital where they were organized for service, not only in the university, but throughout the city. From these classes seventy-two men were supplied to the Red Cross Hospital, thirty-eight at various other city hospitals doing emergency work, and nine at other hospitals in the immediate vicinity of the university. This was in addition to those employed on the campus. In all, nineteen hospitals were supplied, either in whole or in part, with residents and interns from the members of the two classes. Many of the students visited private patients under the auspices of the city board of health, University Settlement, and some other organizations. These men were employed not only as interns, but also as nurses and orderlies and did other necessary work in caring for the influenza patients during the emergency, working long hours and showing the greatest spirit of self sacrifice. A number of them became ill in the performance of their voluntary duties.

WASHINGTON

Medical Society Facing Charges.—The Washington Hospital Association has requested that the King County Medical Society be permanently enjoined from further alleged acts, and also asked that a mandatory injunction be issued compelling the association to restore to full membership Drs. J. C. Moore, Frederick A. Cook, R. P. McClain and W. E. McClain, who were suspended last summer for having, it is alleged, served the association. The association charges the members of the King County Medical Society are being coerced to withdraw and keep their services from the association.

Personal.—Dr. Alice M. Smith, Tacoma, has been elected a fellow of the North British Academy of Arts, and an honorary member of the council.——Dr. Alexander R. Lundgren, Spokane, is reported to be seriously ill at his home with pneumonia.——Dr. Edward P. M. Condon, Spokane, is ill at the Sacred Heart Hospital with pneumonia following influenza.——Dr. William W. Webb is reported to be seriously ill with influenza.——Dr. Miles U. Lieser, Vancouver, who has been critically ill with influenza, is reported to be improved. ——Dr. Ida N. McIntire is said to be seriously ill at her home in Everett.

CANADA

Memorial Tablet.—The Regina (Sask.) Medical Association will erect a tablet in the local General Hospital to the memory of Dr. E. E. Meek, Regina, who was killed in France while operating on a wounded soldier in a Red Cross Hospital bombed by German airmen.

Must Be Military Surgeons Only.—It is reported from Ottawa that the Federal military authorities will require that all military physicians in Canada who are on the pay roll, will in future be required to devote their whole time to their military duties and discontinue their private practices. The order issued reads as follows: "No medical officer who is engaged in civil practice will be permitted to draw full time pay and allowance except when sent for temporary duty away from his home station."

Personal.—Lieut.-Col. Charles S. McVicar, Toronto, who returned from overseas recently where he was on the Orpington Hospital staff, has been appointed senior physician at the Spaldina Military Hospital, Toronto.——Dr. Roy H. Thomas, who has been overseas between two and three years, has been awarded the Military Cross.——Capt. J. H. Box, Lieut. Hendry Connell, Kingston, Ont., and Major Wellington M. Carrick, M.D., Hamilton, Ont., have gone as medical officers with the Canadian Siberian Expedition.

Tablet to Soldier Poet.—A memorial tablet has been placed in the Royal Victoria Hospital, Montreal, in honor of Col. John McCrae. It contains the following inscription: "In memory of Lieut.-Col. John McCrae, assistant pathologist and assistant physician, 1904-1917, chief of the medical division No. 3, McGill Canadian General Hospital, Boulogne, France, consultant of the First Army. Died on active service in France, Jan. 28, 1918." Then follow the stanzas of Colonel McCrae's famous poem, "In Flanders Fields."

GENERAL

Unauthorized Solicitor Appointing Medical Examiners.—We are informed that an individual signing himself "W. W. Beck" is appointing physicians as medical examiners of the Colonial Guards of America, soliciting a fee of $5. When last heard from he was working in Ohio. Mr. F. L. Runyon, secretary of the Colonial Guards of America, states that Mr. Beck is not authorized to solicit for the organization.

Missouri Valley Physicians Elect New Officers.—At the thirty-first annual meeting of the Medical Society of the Missouri Valley, held in Omaha, September 19 and 20, Des Moines was selected as the next place of meeting, and the following officers were elected: president, Dr. Charles Wood Fassett, Kansas City, Mo.; vice presidents, Dr. Elbert J. Watson, Diagonal, Iowa, and Dr. Joseph M. Aikin, Omaha; secretary, Dr. S. Grover Burnett, Kansas City, Mo., and treasurer, Dr. Oliver C. Gebhart, St. Joseph.

Bequests and Donations.—The following bequests and donations have recently been announced:

The City of Duquoin, Ill., $200,000 for a hospital for the city by the will of Mrs. Lillie A. Browning, Chicago.

Federation of Jewish Charities, Philadelphia, 4 per cent. of the income from the real estate of the late Samuel Sternberger, not to exceed $1,000 annually; Jewish Hospital Association 2 per cent. of the income from the same source not to exceed $500 annually. Also a payment of $20,000 to the Federation of Jewish Charities, and $10,000 to the Jewish Hospital Association, only the interest from these funds to be used.

Federation of Jewish Charities, Philadelphia, a bequest of $2,500 by the will of Eva K. Coons.

Influenza.—The influenza epidemic seems to be subsiding generally throughout the country and places heretofore closed have been opened gradually. November 2, the new cases of influenza reported from the Army camps for the previous twenty-four hours was 1,577 against 2,076 for the twenty-four hour period preceding that. The new pneumonia cases were 292, an increase of 12. The deaths for November 2, were 103, equalling the total for the previous day, but making a low record for influenza. October 30, according to the report of the emergency public health committee, approximately 11,000 deaths from influenza had occurred in Massachusetts, but it has now almost subsided. October 11, it was reported from Cape Town that influenza was spreading with alarming rapidity throughout South Africa.

Allied Surgeons Tour America.—A party of eminent surgeons from abroad has been making a tour of the United States acompanied by Lieut.-Col. George E. Brewer, M. C., U. S. Army, New York City; Col. William J. Mayo, M. C., U. S. Army, Rochester, Minn.; Col. Franklin H. Martin, M. C., U. S. Army, Chicago, and Dr. Pilcher, New York City. They have been entertained and have delivered addresses on various phases of military surgery in St. Paul, Rochester, Philadelphia, Chicago, New York, and other cities. The party consists of Col. Sir Thomas Myles, Dublin, Ireland, Major G. Gray Turner, New Castle-on-Tyne, England, Col. George E. Gask, St. Bartholomew's Hospital, London, Prof. Raffaele Bastianelli and Major Pouletti, Rome, Major Pierre Duval and Lieut. Henri Beclere, Paris, and Major Poillet, Ambre, France.

FOREIGN

War Fund for Physicians.—The *Nederlandsch Tijdschrift* quotes a German exchange to the effect that the Leipzig League is appealing urgently for contributions to its war fund to aid physicians, saying that the monthly appropriations from it are already 5,000 marks, and the demand is increasing week by week. Funds are needed also for aid to physicians' families, especially for widows of physicians.

Increased Legal Rates for Medical Services in Prussia.—According to the *Nederlandsch Tijdschrift*, the Prussian minister of the interior has ordered that the minimum payment for medical services by the state, insurance companies, charitable institutions, etc., is to be raised by 50 per cent. after September 1. This increased rate is to prevail for a year after the war. The maximal remuneration for specialist work is also increased. By mutual agreement the maximum rates can be surpassed, but in case of dispute the legal tariff is a guide to the courts.

Death of British Naval Officer.—Surg. John Hadwen, lieutenant-commander, Royal Navy, senior surgeon on *H. M. S. Lancaster*, in service on the Pacific Station, died at the Agnew Sanatorium, California, October 23, from pneumonia following influenza. Dr. Hadwen was 35 years of age; M.B., B.S., M.R.C.S., L.R.C.P. (Lond.), 1907. An international funeral service was held, October 24, participated in by Rear Admiral William Fullam, U. S. Navy, with his staff, and Admiral B. H. Holcomb, Royal Navy, with his staff and companies of sailors from the *U. S. S. Oregon* and *H. M. S. Lancaster*.

SOUTH AND CENTRAL AMERICA, MEXICO AND WEST INDIES

Standardization of Antiserums in Uruguay.—The *Revista Medica del Uruguay* states that the Consejo Nacional de Higiene has now made definite arrangements for the control of the production and sale of therapeutic serums made in Uruguay, and of conditions to regulate their sale in other countries.

Student Congress.—The *Revista Medica del Uruguay* relates that arrangements are under way for a general gathering of the students of the universities of the countries which owe their liberty to Bolivar, namely, Ecuador, Bolivia, Peru, Colombia and Venezuela. The University of Guayaquil has taken the lead in the matter.

Radium Loaned by Uruguay to Brazil.—Dr. C. Butler, director of the Radiology Institute of Montevideo, was sent recently to Rio de Janeiro with the amount of radium which the Facultad de Medicina of Montevideo was empowered by the government to loan to the Facultad de Medicina of Rio de Janeiro. The university authorities invited him to deliver an address on the results achieved with radium in Uruguay, and he described with lantern slides the work done at the institute in his charge.

CORRECTION

Marriage Notice Incorrect.—THE JOURNAL for October 19 contains announcement of the marriage of Lieut. Maurice Rashbaum to Miss Justine Todd. The announcement was based on a letter received by THE JOURNAL, signed L. Todd. We are requested both by Miss Todd and by Lieutenant Rashbaum to state that the announcement was incorrect.

BUENOS AIRES LETTER

Buenos Aires, Sept. 13, 1918.

University Interchange

Since last year there has been established an active interchange of professors between the medical departments of the universities of Buenos Aires, Rio de Janeiro and Montevideo. During the current year Dr. Etchepare, professor of psychiatry at Montevideo, and Dr. Austregesilo, professor of clinical neurology at Rio de Janeiro, have delivered lectures in Buenos Aires. The latter is still in the city. One of his lectures was on "Vagotony," one on "Studies of the Reflexes" and one is announced on "Cataphrenias."

On the occasion of the second South American Conference on Hygiene, Microbiology and Pathology, which is to convene at Rio de Janeiro, October 15, at the same time as the eighth Brazilian Medical Congress, several Argentine professors are to go to Rio, among others Drs. Araoz Alfaro, Zarate, etc. The national government has sent various delegates.

The local Facultad de medicina has arranged with the facultad of the University of Montevideo for an annual interchange of some of the professors.

Changes in the Medical Staff of the University

When the time came for election of the dean of the Facultad de medicina of Buenos Aires, the minister of public instruction requested that the election should be postponed until after the approbation of the reform of the statutes of government of the universities which had been submitted for government approval and action. This request for delay was badly received by some of the professors, and they sent in their resignation. As the dean, Dr. Bazterrica, had completed his term and no one had been appointed to succeed him, the oldest member of the staff, Dr. Eliseo Canton, was called to the direction of the school.

Infant Mortality

In view of the increase in infant mortality in the last few years, the Sociedad de Pediatria is to devote some special meetings to the study of this medico-social problem. They have invited other medical associations of the country and of Uruguay to take part in the conferences.

The Sociedad Eugenica Argentina has just been founded.

MADRID LETTER

Madrid, Oct. 1, 1918.

Epidemic Influenza Swoops Down on Spain Anew

After the subsidence of the epidemic of influenza in Spain last spring, the summer was extremely dry, the drought being worse than even the oldest inhabitant could remember, and the epidemic of several months before flared up again, and this time in a severer form. It seems that the Pfeiffer bacillus alone or associated with the pneumococcus and streptococcus is producing in certain localities a form of influenza that is fatal in a few hours. As I am writing there are some towns in which every inhabitant has been stricken, and others in which of the total of 500 inhabitants, only seventy or eighty are still on their feet. All the others are sweating and shivering in their beds, waiting for the visit from the doctor, always the true hero and today as ever the victim of a still imperfect sanitary organization. The disease at its first outbreak seemed to yield to the extreme hot weather, but in this second outbreak it has spread throughout the whole of Spain, this wide diffusion favored by official inefficiency and irresponsibility, which ought to be penalized. Nothing of the kind will be done, however, as politics and the dependent situation of the medical officers, subordinate to the civil authorities, impede the regular and systematic functioning of the public health service, which otherwise might have checked the advance of this second epidemic of grip. Notwithstanding the official decrees that the local authorities are to inform the central national authorities when there is a change in public health conditions in their respective regions, many, very many mayors, in order not to interrupt some local festival or shorten the stay of resorters, have kept silent in regard to the presence of the epidemic, threatening the local health officer that he is not independent and is not free to express his views on the arbitrary conduct of the local authorities, often heedless or ignorant of sanitary problems.

The Spring Epidemic of Influenza

Toward the close of last spring the whole of Spain was invaded by a disease sudden in its appearance, brief in its course, and subsiding without leaving a trace: general malaise, headache, pains in joints and muscles, high fever, slight bronchitis, much sweating and . . . after three days we were out again, a little weak and pale, and telling our friends how we had just had the . . . the . . . What should we call what we had been having? Some name had to be found, and the Madrilenians, as a joke, soon found a name for it. Not long before there had been a musical comedy at one of the theaters, "The Song of Forgetfulness," and one of its numbers, the "Soldier of Naples," sung by a patrol of soldiers, became very popular and was hummed, whistled and played until every one became deathly tired of it. As every one had become deathly tired of the disease we had been having, and as no one seemed able to escape from the tune or the disease, the latter was dubbed "the Naples soldier" too.

THE PANDEMIC OF INFLUENZA

When the epidemic in Spain subsided with the onset of the heated term, every one supposed that the calamity was over, and we were surprised to learn that the disease was making ravages in other countries, and that people there were calling it the "Spanish grip." And wherefore Spanish? Was it not the same grip that Chauffard had observed in Paris and had reported at a meeting of the Société médicale des hôpitaux several weeks before it had made its appearance in Spain? The germ may have increased its virulence and its power of diffusion in Spain, but it is evident that this epidemic was not born in Spain, and this should be recorded as a historic vindication. The extraordinary spread of epidemic influenza and its alarmingly rapid propagation are due to the fact that, as the bacilli are installed in the pharynx and as one of the characteristics of the disease in its incipience is a tickling in the throat, a slight pharyngotracheitis, there is a frequent impulse to cough and hawk, before the general health is impaired so that one has to stay in bed. This coughing relieves the tickling in the throat, but at the same time it spreads droplets of the secretions around and with them the dangerous bacilli, which are inhaled by healthy persons and multiply in them. Expectorated sputum, as also the expelled droplets, dry on the ground and the bacilli on them get breathed in dust. It is obvious that in offices, theaters, street cars, cafés, etc., the epidemic encounters the most favorable conditions for its diffusion.

From all over Europe news came to us that our guest, the famous "soldier," had been converted from "Neapolitan" into "Spanish," and we heard of the same diversities of opinion and judgments as we had in our own home. But now—we thought—we could be tranquil spectators, instead of actors, not knowing of the second representation of the comedy, which was even then preparing for us and which soon turned into a tragedy. This confirmed what Dr. Cortezo, the president of the Academia de Medicina and director of the *Siglo Medico* had said in regard to the menace of aggravation of the epidemic when it seemed on the point of disappearing, which had been a feature of other epidemics of influenza.

MORTALITY OF THE EPIDEMIC

A few days after the first cases we learned that some friend with heart disease had succumbed to the "soldier"; then we heard of others with chronic bronchitis, kidney disease or other taints, and in a week from the first case the death rate of the city had doubled. The physicians were exhausted, the druggists had to get extra help, and the city and state executive offices were closed, as also offices of all kinds, shops, schools and theaters. Even the famous "soldier song" was not heard any more. The laboratories collected material for research on the exact diagnosis and published varied and picturesque reports in the daily papers. According to some it was a tropical disease, others regarded it as the immediate effect of meteorologic conditions, some ascribed it to a certain species of mosquito while at that time none of those mosquitoes were to be found in Madrid; others attributed it to some insect prevalent in the Balkan states, and there were even some chemical authorities who attributed it to asphyxiating gases.

REPORT OF SCIENTIFIC SOCIETIES

The highest authority in medical matters in Spain, the Academia Nacional de Medicina, declared that it was the grip, the features of the epidemic being closely analogous to those of the pandemic of 1889 and 1890 which the majority of the members remembered. The association comprising younger men, the Academia Medico-Quirurgica, accepted the same diagnosis, and Dr. Falco presented specimens showing the Pfeiffer bacillus more distinctly than had been possible hitherto, and the findings were positive in nearly every case examined.

FALCO'S BACTERIOLOGIC TECHNIC

Falco follows Pfeiffer's original technic as modified by his pupil, Scheller. The main point is to rinse the sputum thoroughly and disintegrate it, first in saline and then on the slide. The bacillus is generally ensconced in the very center of the masses of sputum, and the mucin prevents the stain from reaching the bacillus. Hence the enormous difference between the findings of those who take pains in this direction and those who prepare the specimens with defectively disintegrated and washed sputum. Falco does not apply the Pfeiffer procedure with dilute fuchsin at once, but applies the Gram method first, and then the Pfeiffer dilute fuchsin technic.

For inoculation of agar he uses an emulsion of the sputum in sterile bouillon. Thanks to the predominance of the Pfeiffer bacillus over all others, this dilution favors pure cultures. Instead of inoculating the agar as Pfeiffer does and then adding a few drops of blood taken directly from the wing of a pigeon or the human finger, Falco first hemolyzes the blood, as the hemoglobin is the only element in the blood that is necessary for the proliferation of the Pfeiffer bacillus. Falco hemolyzes the blood and mixes it with the agar to begin with. He collects 10 or 12 drops of blood from a vein in the wing of a dove, drawing it directly into a test tube containing 15 or 20 c.c. of distilled water. He agitates the blood, which thereby becomes defibrinated and hemolyzed, and it is then mixed with 100 or 120 c.c. of agar, melted and cooled to 55 C., which is then poured rapidly over the plates.

LONDON LETTER

LONDON, Oct. 8, 1918.

The Prevention of Venereal Disease Among Soldiers

The prevention of venereal disease in the army and navy is a problem that has always exercised the authorities, and of course during this greatest of wars has received increased attention. Under the Defense of the Realm Act (an act giving the government special powers during the war), a regulation known as 40 D has been in force for some months. According to this regulation, "no woman who is suffering from venereal disease in a communicable form shall have sexual intercourse with any member of His Majesty's Forces or solicit or invite any member to have intercourse with her." The excellent intention of this regulation has proved most difficult to carry out. In only four out of the first eight cases in which charges arising out of it were made was a conviction obtained. Subsequently a lawyer acting for the police in a case said that in his experience prosecutions under the regulation had not turned out satisfactory; of five cases conducted by himself, all had failed. The difficulty was due to the time elapsing between the inception of the disease in the man and the examination of the woman. Commenting on this, the *Lancet* states that in a large proportion of cases it has proved impossible to establish the existence of "venereal disease in a communicable form," although some of the women were demonstrably leading a disorderly life. It adds that a searching bacteriologic examination involving the use of the vaginal speculum and the expression of secretion from the urethra and cervix may fail to establish evidence of infection in cases in which clinically it is almost certainly present. This is in harmony with the difficulty—according to some the impossibility—of curing gonorrhea in the female. Apart from the fact that the woman may be merely a carrier of infection without at any time clinically suffering, it may frequently happen that an infective spot is present in the genital tract beyond the reach of the most exhaustive examination. In other words, the coitus test is more delicate than the bacteriologic. Under the regulation, "a woman charged with an offense shall be remanded for the purpose of such medical examination as may be requisite for ascertaining whether she is suffering from such a disease"; but as no examination suffices to ascertain the presence of infection, the *Lancet* considers that this discredits the regulation as a public health measure. Furthermore, difficulty may arise as to positive medical evidence. Even when the woman is shown to be infectious, the length of time between inception of the disease and examination may leave the physician in doubt as to which party infected the other. The *Lancet* further considers that the examination of a woman not for the purpose of treatment and therefore not in her own interest, is a legal measure that does not commend itself to the moral sense of the majority of the profession.

The dangers to which soldiers are exposed by solicitation in the streets has been discussed in the *Times*. An American in this country, Mr. Bok, editor of the *Ladies' Home Journal*, wrote condemning very strongly the temptations to which American soldiers are exposed in the London streets and contrasting the conditions unfavorably with those in the neighborhood of the camps in America. He was answered, however, by another American editor, who said that the great American cities were in no way better than London. I may add that on personal inquiry at one of the American hospitals in London I have ascertained that the percentage of venereal disease among the patients is very small.

Pharmacy and the War

At the opening of the seventy-seventh session of the School of Pharmacy of the Pharmaceutical Society, Dr. Addison, the minister of reconstruction, delivered an address. He said that the greatest danger to much of our trade and industry had been German organization, training and method, especially in the application of physical science. Without being original themselves, the Germans took hold of the ideas of others, often British in their origin, and applied and developed them with painstaking thoroughness, so that in many British industries they had been gradually acquiring greater power than they would ever have gained by force of arms. The British nation needed a far more thorough and comprehensive application of science to industry and production in an organized form than they had hitherto sought to obtain. He spoke of the rude awakening in this country soon after we went to war because of our depending on Germany for many of the most commonly prescribed drugs and chemicals, and of the methods that had been successfully taken to cope with the difficulties arising from this cause. The result is that today there are none of those medicinal preparations of great importance that are not being made in amply sufficient quantities in this country. As examples he mentioned acetylsalicylic acid, salicylic acid and procain. Much progress has also been made in the home production of many wild plants, such as belladonna, so that the supply of many of these is fully adequate to our needs. The story of the combat with the deficient drug supply would provide a most interesting and attractive example of many of our national achievements during the war. The particular lesson standing out is that we must have a much better supply of trained chemists. When at the beginning of the war the British government advertised for trained chemists at a salary of $15 a week, this was a striking example of the kind of estimate the country at that time had formed as to the place of science in industry.

PARIS LETTER

PARIS, Oct. 3, 1918.

Did Grip of 1890 Confer Immunity?

The most extravagant stories have been circulating among the public with regard to the present epidemic of influenza, as though it were an entirely new disease. In reality it has long been known. As early as 1643, Etienne Pasquier described certain epidemics in which it is easy to recognize influenza. The Académie de médecine devoted to discussion of it nearly its entire meeting, October 1. Netter confirmed the absolute identity of the present epidemic with the one that raged in Paris in 1889-1890. In fact, the small number of cases occurring among old persons at this time may be taken to indicate that immunity to the disease was established by an attack dating back to the previous epidemic. This fact, of itself, would confirm the identity of the present disease. The course of the two epidemics is identical: Cases are benign at first, pulmonary complications later darkening the prognosis; there are intestinal complications, often with dysenteric characteristics; there is extreme contagiousness, to which physicians and nurses pay heavy tribute, and, finally, from the bacteriologic point of view, the bacillus of Pfeiffer is found in about half the cases. The progress of the epidemic cannot be followed from country to country, as was the case twenty-five years ago, this time, however, because of the military happenings. But there is no reason whatever for designating the disease "Spanish influenza or grip," when it is well known that it raged in Germany and in France before it occurred in Spain.

Drs. R. Wurtz and Fernand Bezançon have made an investigation of certain cases occurring in the hospitals of Paris, which by their unusual severity and the predominance of certain symptoms gave rise to the belief among the laity that the disease is cholera. This assumption is absolutely a wrong one. It is based entirely on the coexistence of the intestinal and pulmonary form of grip or of dysentery with cyanosis; but in every case, laboratory investigation has shown that there is not a single trace of any pestilence or exotic disease.

In the very severe cases, complicated by pulmonary edema, Dr. Ravaut advocates prompt bleeding, the withdrawal of from 500 to 700 gm. of blood, or even more, sometimes repeating the process. He also prescribes at the same time acetylsalicylic acid, if the kidneys are not affected, and hexamethylenamin when the urine is scanty and albuminous, the drug being administered orally or intravenously. Bleeding, in his opinion, is indicated in all cases of influenza of the congestive type accompanied by a frequent dry cough with beginning cyanosis.

The Food Supply

A very important step has just been taken to unify the means of provisioning the nation. A decree published in the *Journal officiel* provides that the minister of agriculture and food commissioner, who already is in charge of the provisioning of the armies in the field and of the civil population, shall also have charge of the provisioning of the ordinary troops and of the establishments of the Service de Santé. This will do away with the competition in the purchase of foods—which still exists—and finally unites the various services under one direction, unifying the various organizations that have hitherto had parallel functions in the distribution of food, placing on a common basis all goods, storehouses and personnel. The *magasins d'approvisionnement* of the Service de Santé, established in January, 1917, by M. Justin Godart, then undersecretary of state of the Service de Santé militaire, will cease to be the exclusive property of the military hospitals and of the Red Cross, but will be used, with all their resources, for general provisioning. They will be added to and merged with the regional *magasins* (storehouses) already established by the food commissioners in charge of the food supply for the civil population. This reform will make it possible to use the national resources to the best advantage, to fight the high cost of living, and, to a certain extent, it will help to lessen the difficulties of apportioning food between the various classes of consumers.

Exceptional Service Decorations for Medical Officers

M. Jean Ossola, deputy, has made his report in the name of the Commission de l'armée appointed to examine the proposition of M. Emile Constant, deputy from la Gironde, to admit to promotion in the Legion of Honor the officers of the Service de Santé who have rendered exceptional service. The report is favorable to M. Constant's proposition, and concludes thus: The Chamber of Deputies invites the government to include the officers of the Service de Santé among those military men who may be decorated by the Legion of Honor for exceptional services.

Legion of Honor for President of American Red Cross

The French government has bestowed the cross of commander of the Legion of Honor on M. Davidson, president of the American Red Cross, as an evidence of the high esteem in which he is held and in recognition of the great services that the American Red Cross has rendered to the war victims in France.

Death of Dr. Tribondeau

Dr. Tribondeau, *médecin principal de la marine*, died in the naval hospital at Achilleion, Corfu, aged 46. At first professor in the Ecole de Service de Santé de la marine, then head of the laboratory of bacteriology of the fifth arrondissement maritime, he was after several months called to direct the bacteriologic service of the Hôpital de l'Achilleion. Fatigued and already ill, he was on the point of returning to France when an epidemic of influenza made its appearance among the crews of the vessels stationed at Corfu. He insisted on remaining at his post to attend the sick, without thinking of himself. He was attacked by the disease and died in ten days.

Marriages

Lieut. Earl Hick Mitchell, M. C., U. S. Navy, Indianapolis, on duty at Tampa, Fla.; to Miss Mollie Melvine Tucker of Tampa, Fla., August 22.

Luther W. Little, Nemaha, Iowa, to Miss Selma V. Olsen, of Michigamme, Mich., at Des Moines, October 12.

Silas Addison Austin, to Mrs. Naomi N. Brown, both of Los Angeles, October 23.

Deaths

Walter Franklin Chappell ⊕ New York City; University of Toronto, Ont., 1879; M. R. C. S., England, 1881; aged 62; member of the American Laryngological Association, American Laryngological, Rhinological and Otological Society and American Otological Society; professor of clinical laryngology in the College of Physicians and Surgeons in the City of New York since 1910; surgeon to the Manhattan Eye, Ear and Throat Hospital, since 1887; consulting laryngologist to the Loomis Sanatorium; dropped dead in his office, October 19.

Major Frederick Oswin Waage, M. C., U. S. Army ⊕ Philadelphia; on duty at Fort Bliss, Texas; University of Pennsylvania, Philadelphia, 1904; aged 41; a member of the Association of Military Surgeons of the United States; formerly chief of the medical dispensary and chief anesthetist of the Methodist Hospital, Philadelphia; who entered the National Guard of Pennsylvania in 1907, and was on duty at the base hospital, Fort Bliss, Texas; died suddenly at that post, October 31, from heart disease.

Astley Cooper Clark, Pittsburgh; University of Pittsburgh, 1891; aged 48; a member of the Medical Society of the State of Pennsylvania; local surgeon to the Baltimore and Ohio System, and for twenty years surgeon for the Pennsylvania Railroad; a member of the surgical staff of St. Francis' Hospital for twelve years, and for three years president of the Lawrence School Board; died at his home, October 20, from pneumonia following influenza.

Jane Rogers Baker ⊕ West Chester, Pa.; Woman's Medical college of Pennsylvania, Philadelphia, 1892; aged 51; fellow of the American Medico-Psychological Association; who after serving in insane hospitals in Massachusetts, was given charge of the Insane Department of the Chester County Home in Embreeville, where she remained several years; originator of child welfare work in West Chester; died at her home, October 23, from typhoid fever.

John Ranly ⊕ Cincinnati; Medical College of Ohio, Cincinnati, 1891; aged 42; fellow of the American Academy of Ophthalmology and Oto-Laryngology; oculist and aurist to St. Francis, Good Samaritan and St. Mary's hospitals; instructor in the eye clinic of his alma mater; and recently made a member of the faculty; died at the home of his mother in Cincinnati, October 13, from pneumonia following influenza.

Robert B. Gray, Port Carbon, Pa.; Medico-Chirurgical College of Philadelphia, 1894; aged 52; a member of the Medical Society of the State of Pennsylvania; for six years, deputy coroner of the Port Carbon, New Philadelphia and Middleport district; for ten years a member of the Board of Health of Port Carbon and Palo Alto, and for one year a member of the Port Carbon council; died at his home, October 19.

George William Booher, Berry, Ky.; University of Louisville, Ky., 1917; aged 26; a member of the Kentucky State Medical Association; one of the first physicians of Harrison County to be commissioned in the Medical Reserve Corps, but discharged by reason of physical disability in September, 1918; died at his home, October 18, from pneumonia, following influenza.

Lieut. Glenn Dewey Ransom, M. C., U. S. Army ⊕ Big Rapids, Mich.; University of Michigan, Ann Arbor, 1913; aged 34; who was sent to England early in the summer of 1917, and later went to France with a hospital unit and was decorated by the French government in June, 1918, for bravery; died in France, last month, from wounds received in action.

Alexander Simpson Kelly ⊕ Oakland, Calif.; Cooper Medical College, San Francisco, 1901; aged 39; professor of operative surgery in Oakland College of Medicine and Surgery; for twelve years a member of the board of education, and for three years its president; died in the Oakland Central Hospital, October 24, from pneumonia, following influenza.

William Elmo Turton, Washington, D. C.; Georgetown University, Washington, D. C., 1908; aged 35; a member of the Medical Society of the District of Columbia; also a graduate in pharmacy; a medical employee of the Health Department of the District of Columbia; died at his home, October 10, from pneumonia following influenza.

Eugene Bryce Osborn, Cleburne, Texas; University of Texas, Galveston, 1896; aged 47; local surgeon of the Missouri, Kansas and Texas Railway, and chief surgeon of the

Dallas, Cleburne and Southwestern Railway; health officer of Cleburne and Johnson County; died at his home, October 19, from pneumonia, following influenza.

Lieut. Robert Kenton McGuffin, M. C., U. S. Army ⊕ Imperial, Calif.; Maryland Medical College, Baltimore, 1911; aged 33; a member of the Medical Society of the State of California; coroner of Imperial County; who was ordered to report for duty at Camp Kearney, October 23; died at his home, October 20, from pneumonia, following influenza.

William Benjamin Hardman ⊕ Commerce, Ga.; College of Physicians and Surgeons in the City of New York, 1889; aged 53; once president of the Medical Association of Georgia; president of the board of trustees of Mercer University, and president of the Bank of Commerce; died at his home, October 28, from pneumonia.

Manly J. D. Dantzler, Elloree, S. C.; Medical College of the State of South Carolina, 1861; aged 78; a member of the South Carolina Medical Association, and president of the Orangeburg County Medical Society; surgeon in the Confederate Service during the Civil War; died at his home, October 12.

Thomas Best Kramer, Washington, D. C.; Howard University, Washington, D. C., 1887; aged 66; a member of the Medical Society of the District of Columbia; also a graduate in pharmacy; and at one time pharmacist in the Navy; died at his home, October 11, from pneumonia following influenza.

William Hupp Sands ⊕ Fairmont, W. Va.; University of Pennsylvania, Philadelphia, 1898; aged 45; a specialist on diseases of the nose and throat; while driving in his automobile over a grade crossing near Fairmont, October 22, was struck by a Baltimore and Ohio train, and instantly killed.

Joseph James Wilson, Jr. ⊕ Coldwater, Miss.; Tulane University, New Orleans, 1907; aged 32; local surgeon of the Illinois Central Railroad; who received orders to report for duty at Camp Beauregard, La., the day of his death; died at his home, October 16, from pneumonia, following influenza.

David Webster Meyer, Brooklyn; Long Island College Hospital, Brooklyn, 1894; aged 47; surgeon to the Brooklyn Eye and Ear Hospital; consulting surgeon to Samaritan Hospital, Brooklyn; ophthalmologist to the Home for Consumptives; died at his home, October 24, from pneumonia.

Asst. Surg. Rushmer Christian Christiansen, Lieut., U. S. Navy ⊕ State University of Iowa, Iowa City, 1913; aged 28; who entered the Navy in July, 1917, and was on duty at Mare Island, Calif.; died in the Naval Hospital at Mare Island, October 19, from pneumonia following influenza.

Emanuel Joseph Leavitt, Brooklyn; College of Physicians and Surgeons in the City of New York, 1904; aged 41; radiologist to the Wyckoff Hospital, Brooklyn; a member of the staff of St. Mark's and the German hospitals; died at his home, October 24, from pneumonia, following influenza.

Selma Marstella Mason ⊕ Clarksburg, W. Va.; George Washington University, Washington, D. C., 1900; aged 41; chief surgeon of the Mason Hospital, Clarksburg; for several years coroner of Harrison County; died in the Mason Hospital, October 21, from pneumonia, following influenza.

Capt. Jean Paul Gay, M. C., U. S. Army ⊕ McAlester Okla.; University of Louisville, Ky., 1908; aged 34; in charge of the venereal disease campaign in Oklahoma, under the United States Public Health Service; died at his home, October 25, from pneumonia, following influenza.

Charles James Laffin ⊕ Gallup, N. M.; New York University, New York City, 1893; aged 51; who conducted a private hospital in New York City for many years and in 1908 entered the United States Indian Service; died at his home, October 18, from pneumonia following influenza.

Thomas Sanford Dunaway Grasty, Washington, D. C.; George Washington University, Washington, D. C., 1901; aged 38; a member of the Medical Society of the District of Columbia, and a specialist in pediatrics; died at his home, October 20, from pneumonia following influenza.

Flora Estella Parker Easton ⊕ Norristown, Pa.; Woman's Medical College of Pennsylvania, Philadelphia, 1901; aged 46; for eight years a member of the staff of the Norristown State Hospital for the Insane; died in that institution, October 25, from pneumonia following influenza.

James Watt Keen, Philadelphia; Medico-Chirurgical College of Philadelphia, 1897; aged 56; one of the first physicians of Philadelphia to report for emergency duty during the epidemic of influenza; died at the Emergency Hospital, Philadelphia, October 23, from influenza.

Lieut. Wendell James Phillips, M. C., U. S. Army ⊕ Corvallis, Ore.; Jefferson Medical College, 1915; aged 31; for two years physician in charge of the Oregon Agricultural College, Corvallis, Ore.; died at Camp Lee, Va., October 13, from pneumonia following influenza.

Thomas Howard Irwin, Moulton, Ala.; Vanderbilt University, Nashville, Tenn., 1900; aged 41; a member of the Medical Association of the State of Alabama; chairman of the Lawrence County Board of Health; died at his home, October 17, from pneumonia following influenza.

Frederick Allen Stafford, Phoenix, Ariz.; Hahnemann Medical College, Chicago, 1895; aged 28; a member of the Arizona Medical Association, and president of the Arizona Board of Medical Examiners; died at his home, October 18, from pneumonia following influenza.

Albert Johnson Terrell, Black Mountain, N. C.; University of North Carolina, Chapel Hill, 1908; aged 42; a member of the Medical Society of the State of North Carolina; died in the Meriwether Hospital, Asheville, N. C., October 13, from pneumonia following influenza.

George Wesley Gorrill ⊕ Buffalo; University of Buffalo, 1900; aged 41; American Medico-Psychological Association, and Buffalo Academy of Medicine; superintendent of the Buffalo State Hospital; died at his home, October 27, from pneumonia following influenza.

Clarence Sanford Faulkner ⊕ Elizabethtown, N. Y.; College of Physicians and Surgeons in the City of New York, 1913; aged 33; a member of the Board of Health of Elizabethtown and Lewis; died at his home, October 17, from pneumonia following influenza.

Lieut. Gerard Henry Lebret, M. C., U. S. Army ⊕ Montclair, N. J.; University of Maryland, Baltimore, 1913; aged 32; a member of the staff of Overbrook, the Essex County Hospital for the Insane; died at his home, October 17, from pneumonia following influenza.

Andrew Jackson Gray, Young America, Ind.; Medical College of Indiana, Indianapolis, 1897; aged 64; a member of the Indiana State Medical Association; for several terms a member of the board of commissioners of Cass County; died at his home, October 18.

William Tillman Burks, Fresno, Calif.; College of Physicians and Surgeons, San Francisco, 1900; aged 60; for some time president of the board of health of Fresno and health officer of Fresno County; also a druggist; died at his home, October 21, from pneumonia.

Charles L. Hough, Helena, Ark.; Jefferson Medical College, 1883; aged 57; also a druggist; died at his home in West Helena, October 15, from the effects of a gunshot wound of the head, self inflicted, it is believed, with suicidal intent, while despondent.

Jesse Robinson Kauffman ⊕ Blue Island, Ill.; Rush Medical College, 1907; aged 34; assistant professor of surgery in Loyola University, Chicago; local surgeon to the Rock Island System; died at his home, October 28, from pneumonia, following influenza.

William Henry Robinson, Eudora, Kan.; Kansas City, Mo., Medical College, 1872; aged 70; twice mayor of Eudora; and once postmaster of Liberty Mo., and Monticello, Kan.; died in the Swedish Hospital, Kansas City, Mo., October 18, from pneumonia.

Asst. Surg. Norwin Batte Norris, Lieut. (j. g.), U. S. Navy ⊕ Memphis, Tenn.; University of Tennessee, Nashville, 1917; aged 27; is reported in the *Official Bulletin* of October 14, as missing on the *U. S. S. Ticonderoga,* sunk, September 30, by a submarine.

Stanley Owen Sabel, New York City; College of Physicians and Surgeons in the City of New York, 1898; aged 42; visiting physician and a member of the medical board of Washington Heights Hospital; died suddenly at his home, October 20.

Joseph William Stone, Los Angeles; Jefferson Medical College, 1913; aged 32; a member of the Medical Society of the State of California; for several years a practitioner of Seattle; died at the home of his parents in that city, October 16.

Dean W. McKeen, Mena, Ark.; College of Physicians and Surgeons, Keokuk, Iowa, 1878; St. Louis College of physicians and Surgeon, 1888; aged 65; died in the Christian Hospital, Kansas City, Mo., October 23, after a surgical operation.

John Cassel Buckwalter, Palo Alto, Calif.; Miami Medical College, Cincinnati, 1900; aged 45; formerly of St. Louis, associate professor of otology in the Marion-Sims Beaumont College of Medicine, St. Louis; died at his home, October 13.

John Kirk Formis, Lennox, S. D.; Northwestern University Medical School, Chicago, 1909; aged 38; who enlisted in the Medical Reserve Corps, U. S. Army, June 28, 1918; died at his home, September 30, from pneumonia, following influenza.

Edward Mosher Allen ⊕ Los Angeles; Rush Medical College, 1911; aged 33; assistant professor of obstetrics in the College of Physicians and Surgeons, Los Angeles; died at his home, October 21, from pneumonia, following influenza.

John George Mueller, Iowa City, Iowa; State University of Iowa, Iowa City, 1895; aged 47; for several years assistant in gynecology in his alma mater; died in a hospital in Iowa City, October 17, from pneumonia, following influenza.

Charles Elisha Collins, Rensselaer, N. Y.; Albany (N. Y.) Medical College, 1906; at one time a member of the Medical Society of the State of New York; for several terms city physician; died at his home, October 14, from heart disease.

Frank Hewitt Bartlett ⊕ New York City and Yonkers, N. Y.; College of Physicians and Surgeons in the City of New York, 1888; aged 62; a specialist in diseases of the ear, nose and throat; died at his home in Yonkers, September 14.

Francis Augustus Lane ⊕ Lynn, Mass.; Harvard Medical School, 1892; aged 50; formerly a member of the board of health of Lynn; for four years quarantine officer of the port of Boston; died at his home, October 29, from pneumonia.

Joseph Frank Etzbach, Chicago; State University of Iowa, Iowa City, 1905; aged 34; at one time a member of the Illinois State Medical Society; died in the La Salle (Ill.) Hospital, October 20, from pneumonia, following influenza.

Lieut. Guy Chaille Haralson, M. C., U. S. Army ⊕ Vicksburg, Miss.; Loyola University, Chicago, 1917; aged 36; assistant physician at the East Mississippi Insane Asylum; died at Fort McPherson, Ga., October 24, from pneumonia.

Phillips Carey Vaughan, Chicago; Rush Medical College, 1888; Bellevue Hospital Medical College, 1889; aged 51; medical director of the Ideal Sick Benefit and Accident Association; died at his home, October 25, from pneumonia.

Richard H. Schneider, Chicago; National Medical University, Chicago, 1907; aged 57; was found dead in his apartment, November 1; death being due, it is believed, to suicide by gas asphyxiation, while suffering from melancholia.

Died in the Service
IN FRANCE
LIEUT. WILLIAM C. KANTNER, JR., M. C., U. S. ARMY, 1885-1918
(See The Journal, last week, p. 1507)

Theophilus Radcliffe VanKirk, McKeesport, Pa.; Jefferson Medical College, 1864; aged 78; assistant surgeon of the Two Hundred and Ninth Pennsylvania Volunteer Infantry during the Civil War; died at his home, October 26.

Emil Henry Zimmerman, Colome, S. D., formerly of Cicero, Ill.; Loyola University, Chicago, 1913; aged 33; a member of the Illinois State Medical Society; died at his home, October 21, from pneumonia, following influenza.

Arthur Nolte ⊕ New Orleans; University of Virginia, Charlottesville, 1880; College of Physicians and Surgeons in the City of New York, 1881; aged 58; died at his home, October 24, from pneumonia, following influenza.

Lieut. Holman Simpson Siff, M. C., U. S. Army ⊕ Brooklyn; University and Bellevue Hospital Medical College, 1918; aged 24; an intern in Bellevue Hospital; died at his home, October 20, from pneumonia following influenza.

Thomas Eusebius Byrnes, Chicago; Loyola University, Chicago, 1918; aged 27; a member of the house staff of St. Bernard's Hospital, Chicago; died in that institution, October 10, from endocarditis following influenza.

William N. DeArmond, Fort Collins, Colo.; Keokuk (Iowa) Medical College, College of Physicians and Surgeons, 1902; aged 55; a member of the Colorado State Medical Society; died at his home, October 23, from influenza.

Frederick Waterman Cowles, West Brookfield, Mass.; Dartmouth Medical School, Hanover, 1892; aged 52; a member of the Massachusetts Medical Society; died at his home, about October 15, from bronchopneumonia.

William Williamson ⊕ San Diego, Calif.; McGill University, Montreal, 1891; a specialist on diseases of the eye, ear, nose and throat; oculist to the Sante Fe System; died in Los Angeles, October 19, from pneumonia.

A. Douglas Erwin, Fidelity, Ill.; Missouri Medical College, St. Louis, 1883; while returning from a hunting trip, October 7, was shot and killed by the accidental discharge of a gun carried by one of his companions.

Frank H. Weidemann, Connellsville, Pa.; Medico-Chirurgical College of Philadelphia, 1911; aged 40; local medical examiner for the Baltimore and Ohio System; died at his home, October 24, from influenza.

Wilmer Everett Toney, Red Stone, Mont.; University of Michigan, Ann Arbor, 1911; aged 34; for two years surgeon at the Northern Pacific Railway Hospital, Missoula; died at his home, October 18, from influenza.

Warren DeWitt Ratliff, Lucedale, Miss.; Tulane University, New Orleans, 1893; aged 52; member of the Mississippi State Medical Association; died at his home, about October 24, from pneumonia, following influenza.

Charles S. Wilkirson, Roff, Okla.; Chattanooga (Tenn.) Medical College, 1899; aged 40; a member of the Oklahoma State Medical Association; died in Sherman, Texas, October 16, from pneumonia following influenza.

Lieut. Joseph Daniel Rosenthal, M. C., U. S. Army ⊕ Brooklyn; New York Homeopathic Medical College, 1915; aged 27; died in the base hospital of Markleton, Pa., October 22, from pneumonia following influenza.

Lieut. Timothy Joseph Moran, M. C., U. S. Army ⊕ Pittsburgh; University of Pennsylvania, Philadelphia, 1905; aged 37; a specialist in ophthalmology; died in Camp Greenleaf, Fort Oglethorpe, Ga., October 17.

James H. Reynolds, Louisa, Ky. (license, West Virginia, 1896); aged 48; a specialist in diseases of the eye, ear, nose and throat; and also a druggist; died at his home, October 9, from pneumonia following influenza.

George J. Koch ⊕ Paterson, N. J.; College of Physicians and Surgeons, Baltimore, 1905; aged 38; a member of the staff of St. Joseph's Hospital, Paterson; died at his home in that city, October 19, from influenza.

Joseph White Humphrey Porter † Caribou, Me.; University of Pennsylvania, Philadelphia, 1901; aged 40; a specialist on diseases of the eye, ear, nose and throat; died at his home, about October 31, from pneumonia.

Lee G. Betts, Prairie City, Ill.; Ensworth Medical College, St. Joseph, Mo., 1902; aged 41; a member of the Illinois State Medical Society; died at his home, October 21, from pneumonia, following influenza.

Walter John McGibbon, Chateaugay, N. Y.; Montreal School of Medicine and Surgery, 1911; McGill University, Montreal, 1913; aged 32; died at his home, October 18, from pneumonia, following influenza.

William D. Krebs, Green Bay, Wis.; Marquette University, Milwaukee, 1914; aged 31; a member of the State Medical Society of Wisconsin; died at his home, October 18, from pneumonia, following influenza.

Henry Stark, Baltimore; University of Heidelberg, Germany, 1866; aged 74; for fourteen years city vaccine physician of Baltimore; died at his home in South Baltimore, October 23, from cerebral hemorrhage.

Joseph William Walsh, Portland, Conn.; College of Physicians and Surgeons, Baltimore, 1907; aged 33; a member of the Connecticut State Medical Society; died at his home, October 20, from pneumonia.

Lieut. Homer E. Van Epps, M. C., U. S. Army † [illegible] Ill.; Hahnemann Medical College, Chicago, 1916; aged [illegible] died recently at Camp Mills, Long Island, N. Y., from pneumonia following influenza.

William Nelson Carter, Columbus, Ga.; University of Louisville, Ky., 1906; aged 36; a member of the Medical Association of Georgia; died in the Columbus Hospital, October 17, from influenza.

George Willard Lent, Oxford, Pa.; Jefferson Medical College, 1891; aged 57; superintendent of the Oakwood Sanatorium, Oxford; died at his home, October 18, from pneumonia, following influenza.

Francis Melville Deems, Flushing, N. Y.; Bellevue Hospital Medical College, 1868; aged 72; associate physician to the Flushing Hospital; died at the Presbyterian Hospital, New York City, October 27.

William James McKnight, Brookville, Pa.; Jefferson Medical College, 1884; aged 82; also a druggist; a practitioner since 1857; state senator in 1880; a local historian; died at his home, October 12.

Edward Isadore Schwartz, Fresno, Calif.; College of Physicians and Surgeons, Los Angeles, 1918; aged 26; an intern in the Fresno County Hospital; died in that institution, October 21, from influenza.

Lieut. Robert Archie Sherwood, M. C., U. S. Army ⊕ University of Oregon, Portland, 1916; Army Medical School, Washington, D. C., 1918; aged 28; is reported to have died in action in France, September 17.

Died in the Service
in France
Lieut. Robert A. Sherwood, M. C., U. S. Army, 1890-1918

Lieut. Carl Bibb Hudson, M. C., U. S. Army ⊕ Montgomery, Ala.; Harvard Medical School, 1917; aged 30; died, October 2, a few days after his arrival in France, from pneumonia following influenza.

William P. Harvey, San Francisco; University of California, San Francisco, 1900; aged 43; a member of the Medical Society of the State of California; died at his home, October 27, from influenza.

J. Sanderson Lazarus, Bloomsburg, Pa.; Jefferson Medical College, 1868; aged 76; a member of the Medical Society of the State of Pennsylvania; died at his home, October 19, from heart disease.

Lewis Webster Burdick ⊕ Maryland, N. Y.; Albany (N. Y.) Medical College, 1909; aged 36; died in the Fox Memorial Hospital, Oneonta, N. Y., October 21, from pneumonia, following influenza.

Bradford Augustus Richards ⊕ Rochester N. Y.; McGill University, Montreal, 1901; aged 41; a specialist in diseases of the ear, nose and throat; died at his home, October 22, from pneumonia.

George W. Mullins, Milano, Texas; Kentucky School of Medicine, Louisville; at one time a member of the State Medical Association of Texas; died at his home, October 20, from pneumonia.

John Stanley Scott, Lake Charles, La.; Tulane University, New Orleans, 1912; aged 30; a member of the Louisiana State Medical Association; died at his home, October 17, from pneumonia.

Clinton Lee Hyatt, Kissimmee, Fla.; North Carolina Medical College, Charlotte, 1908; aged 37; a member of the Florida Medical Association; died at his home, October 17, from pneumonia.

Lieut. Chester Cameron Wood, P. A. Surg., U. S. Navy ⊕ on duty on *U. S. S. Alabama;* Jefferson Medical College, 1910; aged 30; who entered the Navy, May 4, 1915; died at sea, October 5.

Thomas B. Slaton, Greenville, Ky.; Barnes Medical College, St. Louis, 1902; aged 39; a member of the Kentucky State Medical Association; died at his home, October 20, from influenza.

Lieut. Edward Kenneth Lubin, M. C., U. S. Army ⊕ New York City; University and Bellevue Hospital Medical College, 1918; aged 24; died in Bellevue Hospital, October 27, from influenza.

Lieut. Ralph Waldo Turner, M. C., U. S. Army ⊕ Albany, N. Y.; Albany Medical College, 1917; aged 24; on duty at Fort Oglethorpe, Ga.; died at that post, October 17, from pneumonia.

True S. Burgess, Washington, D. C., formerly of Russellville, Ark.; George Washington University, Washington, D. C., 1912; aged 31; died at the home of his mother, October 22.

Walter Scott Muirhead, Floodwood, Minn.; University of Illinois, Chicago, 1909; aged 33; was burned to death, about October 13, in the forest fires which prevailed in northern Minnesota.

Foss Edwin Pratt, Ruston, Tacoma, Wash.; Cleveland College of Physicians and Surgeons, 1904; at one time mayor of Ruston; died in a hospital, in Tacoma, October 20, from pneumonia.

Lieut. Frank Benedict Rosinski, M. C., U. S. Army ⊕ Cleveland; aged 27; who had just been ordered to Fort Oglethorpe, Ga., for duty; died at his home, October 21, from influenza.

John Joseph O'Donnell, Boston; Harvard Medical School, 1915; aged 33; who had been in Los Angeles since January, died at that place in October from pneumonia following influenza.

William Meredith Gregory, Berea, Ohio; Cleveland Medical College, 1895; Cleveland College of Physicians and Surgeons, 1899; aged 61; died at his home, October 9, from influenza.

Lafayette Bennett, Elkton, Ky.; University of Tennessee, Nashville, 1900; aged 41; a member of the Kentucky State Medical Association; died at his home, October 20, from influenza.

Henry S. Lindley, Wilkinsburg, Pa.; Jefferson Medical College, 1866; aged 80; surgeon in the federal service during the Civil War; died at his home, October 10, from heart disease.

Charles Francis Montgomery ⊕ Roswell, N. M.; University of Missouri, Columbia, 1905; aged 39; died in St. Mary's Hospital, Roswell, about October 15, from influenza.

Horace David Hermany, Mohoney City, Pa.; Jefferson Medical College, 1892; aged 53; also a druggist; died at his home, October 21, from pneumonia following influenza.

Salamet Isa Aranki, Bridgeport, Conn.; College of Physicians and Surgeons, Baltimore, 1914; aged 32; a native of Jerusalem; died at his home, October 7, from influenza.

Lieut. Benjamin Franklin McArthur, M. C., U. S. Army ⊕ Lizelia, Miss.; Memphis (Tenn.) Hospital Medical College, 1905; aged 35; died at his home, October 20, from influenza.

Charles O. Zahner, Louisville, Ky.; University of Louisville, Ky., 1904; aged 38; professor of physiology in his alma mater; died at his home, October 11, from influenza.

Maude Leontine Morrison, Los Angeles; College of Physicians and Surgeons, Los Angeles, 1917; aged 33; an intern in the Los Angeles County Hospital; died recently.

Wyatt Patrick Exum, Jr., Maxton, N. C.; Medical College of Virginia, Richmond, 1901; aged 43; died at his home, October 16, from pneumonia, following influenza.

Francis Graham Gardiner ⊕ Pittsburgh; University of Michigan, Ann Arbor, 1880; aged 68; died in the Passavant Hospital, Pittsburgh, October 22, from pneumonia.

George Davis Warren ⊕ Ozark, Ark.; University of Arkansas, Little Rock, 1911; aged 34; died at his home, October 19, from pneumonia following influenza.

Lieut. Herman Warner Krantz, M. C., U. S. Army ⊕ Union Bridge, Md.; University of Maryland, Baltimore, 1915; aged 27; died at his home, October 25, from influenza.

Harvey Marshall Vance ⊕ Pleasant Grove, Utah; University of Illinois, Chicago, 1903; aged 40; died at his home, October 16, from pneumonia following influenza.

William Augustus Keeley, Brooklyn; New York University, New York City, 1888; aged 51; died at his home, October 20, from pneumonia following influenza

Samuel Duffie Austin, Handsboro, Miss.; George Washington University, Washington, D. C., 1905; aged 42; died at his home, about October 25, from influenza.

Alfred Hincks Youngs ⊕ Pierre, S. D.; University of Minnesota, Minneapolis, 1907; aged 40; died at his home, October 16, from pneumonia, following influenza.

W. Lugene Seeger, Dallas, Texas; Baylor University, Dallas, 1913; aged 29; died at the Waxahachie (Texas) Sanitarium, about October 23, from pneumonia.

Clarence Wesley Batchelet ⊕ Pine River, Wis.; Milwaukee Medical College, 1912; aged 29; died at his home, October 21, from pneumonia, following influenza.

Alfred Friedman, New York City; College of Physicians and Surgeons in the City of New York, 1876; aged 67; died at his home, October 18, from pneumonia.

Kenneth Field Albee ⊕ Weston, Mass.; Harvard Medical School, 1914; aged 32; died at his home, September 23, from bronchial pneumonia following influenza.

Ralph Jiles Smirl, New Raymer, Colo.; Vanderbilt Medical College, 1915; aged 28; died in the Park Avenue Hospital, Denver, October 18, from influenza.

John C. McClenathan, Connellsville, Pa.; Jefferson Medical College, 1881; aged 66; formerly surgeon to the Cottage State Hospital; died at his home, October 26.

Andrew Donaldson, Kansas City, Mo.; University of Wooster, Cleveland, Ohio, 1874; aged 79; died at his home, October 5, from cerebral hemorrhage.

Stephen Finley Welton, Montezuma, Ga.; Meharry Medical College, Nashville, Tenn., 1909; aged 40; a colored practitioner; died at his home, October 7.

Merlin B. Wyatt ⊕ Manning, Iowa; University of Nebraska, Omaha, 1907; aged 35; roentgenologist; died at his home, October 22, from influenza.

Lorenzo R. Thornton, Filley, Neb. (License, Nebraska, 1891); aged 84; a veteran of the Civil War; died in the Soldiers' Home, Milford, October 17.

Giuseppe Vittorio Sbordone, New York City; University of Naples, Italy, 1889; aged 56; died at his home, October 21, from pneumonia following influenza.

Vincent Jastremski, Montegut, La.; Tulane University, New Orleans, 1897; aged 40; died at his home, October 19, from pneumonia, following influenza.

Curtis E. Bowers, Kersey, Colo.; Hahnemann Medical College, Chicago, 1902; aged 40; died at his home, October 22, from pneumonia following influenza.

Edward Charles Cekul ⊕ La Otto, Ind.; Indiana University, Indianapolis, 1914; aged 33; died at his home, October 24, from pneumonia, following influenza.

Kieran Joseph O'Neill, Coupeville, Wash.; University of Toronto, Ont., 1909; aged 30; died at his home, October 23, from pneumonia, following influenza.

Robert Lenard, Chicago; Illinois Medical College, Chicago, 1900; aged 44; died at South Chicago Hospital, October 27, from pneumonia, following influenza.

Francois DeSales Dube ⊕ Milwaukee; Milwaukee Medical College, 1908; aged 32; died at Amery, Wis., October 23, from pneumonia, following influenza.

Lawrence Dutcher Gillick, Pulaski, Wis.; Milwaukee Medical College, 1909; aged 32; died at his home, October 16, from pneumonia, following influenza.

Paul Henry Hesse, London Mills, Ill.; Chicago College of Medicine and Surgery, 1908; aged 45; died at the Red Cross Hospital, Kankakee, Ill., October 16.

Clyde Switzer Horton, Edgerton, Wis.; University of Illinois, Chicago, 1907; aged 38; died at his home, October 5, from pneumonia following influenza.

William G. Gardiner, Atlantic City, N. J.; Hahnemann Medical College, Philadelphia, 1888; aged 50; died at his home, October 17, from influenza.

Frederick Lovell Bogue ⊕ New York City and Mont Clair, N. J.; University of Pennsylvania, Philadelphia, 1895; aged 48; died at his home, October 26.

Lieut. Eugene Fellner Hull, M. C., U. S. Army ⊕ Berlin, N. Y.; Albany (N. Y.) Medical College, 1913; aged 30; died in Little Rock, Ark., October 18.

Charles J. Reimer, Jr. ⊕ Phoenixville, Pa.; Jefferson Medical College, 1911; aged 32; died at his home, October 13.

Edward John Miller, Urbana, Ill.; University of Illinois, Chicago, 1912; aged 30; died at his home, October 15, from pneumonia, following influenza.

Robert Henry Scott, Laingsburg, Mich.; Detroit College of Medicine and Surgery, 1894; aged 59; died at his home, October 15, from pneumonia.

Silas Baldwin Jacobs, Baltimore; Southern Homeopathic Medical College, Baltimore, 1905; aged 35; died at his home, October 17, from influenza.

Margaret E. Pomeroy, Salem, Ore.; Willamette University, Salem, 1904; died in Portland, Ore., October 23, from pneumonia, following influenza.

Joseph Emil Artiges ⊕ San Francisco; Cooper Medical College, San Francisco, 1887; aged 55; died at his home, October 22, from influenza.

Carl Logan Brown ⊕ Cawker City, Kan.; Kansas Medical College, Topeka, 1913; aged 33; died in Bennington, Kan., October 9, from influenza.

Lieut. Wilburn Edgar Hampton, M. C., U. S. Army ⊕ Ferris, Texas; University of Louisville, Ky., 1910; aged 31; died in Dallas, October 21.

Joseph A. S. Regli, San Jose, Calif.; Georgetown University, Washington, D. C., 1902; aged 42; died at his home, October 24, from influenza.

Alfred F. Skillman, McCracken, Kan.; Northwestern Medical College, St. Joseph, Mo., 1885; aged 61; died at his home, recently, from pneumonia.

John Marye Lewis ⊕ Manassas, Va.; University of Virginia, Charlottesville, 1905; aged 37; died at his home, October 14, from pneumonia.

George Ulrich Panzer, Truman, Minn.; Eclectic Medical Institute, Cincinnati, 1910; aged 37; died at his home, October 23, from influenza.

Ella Florence Preston, Dansville, N. Y.; Eclectic Medical College of the City of New York, 1882; aged 70; died at her home, October 15.

George Greer, Vandalia, Ill.; Missouri Medical College, St. Louis, 1882; aged 67; died at his home, October 17, from cerebral hemorrhage.

Edward Humble Moss, Cincinnati; Medical College of Ohio, Cincinnati, 1900; aged 43; died at his home, October 22, from pneumonia.

John H. Norman, Blanchester, Ohio; Eclectic Medical Institute, Cincinnati, 1875; aged 66; died at his home, October 22, from pneumonia.

Florence Josephine Chubb, San Francisco; University of California, San Francisco, 1918; died at her home, October 28, from influenza.

Paul Willis Brown ⊕ Springfield, Ohio; Barnes Medical College, St. Louis, 1899; aged 47; died at his home, October 14, from influenza.

Benjamin F. Beane, West Manchester, Ohio; Eclectic Medical Institute, Cincinnati, 1881; aged 67; died at his home, October 19.

William Jesse Bedell, New York City; Bellevue Hospital Medical College, 1898; aged 48; died at his home, October 23, from pneumonia.

John Eugene Goldstein, Brooklyn; Fordham University, New York City, 1916; aged 25; died at his home, October 18, from pneumonia.

John Henry Burkartmaier ⊕ Avondale, Pa.; Jefferson Medical College, 1911; aged 35; died at his home, October 18, from influenza.

Karl August Bieber ⊕ Tipton, Kan.; Kansas Medical College, Topeka, 1909; aged 34; died at his home, October 14, from influenza.

John J. Gambill, Martha, Ky.; Louisville (Ky.) Medical College, 1886; aged 75; died at his home, October 10, from heart disease.

Martin A. Montgomery ⊕ Owensville, Ind.; University of Louisville, Ky., 1898; aged 43; died at his home, about October 20.

Darvin S. Gailey ⊕ Ashland, Ill.; University of Illinois, Chicago, 1897; aged 42; died at his home, October 20, from septicemia.

Carl William Lutz, Ottawa, Ill.; University of Illinois, Chicago, 1915; aged 31; died at his home, October 19, from pneumonia.

Eugene Judy Primm ⊕ Chatham, Ill.; Barnes Medical College, St. Louis, 1910; aged 36; died, recently, from pneumonia.

The Propaganda for Reform

In This Department Appear Reports of the Council on Pharmacy and Chemistry and of the Association Laboratory, Together with Other Matter Tending to Aid Intelligent Prescribing and to Oppose Medical Fraud on the Public and on the Profession

MORE MISBRANDED NOSTRUMS

Baker's Tubercular Remedy.—Edward D. Morgan, who had been treasurer and general manager of the W. H. Baker Co. of Cleveland, Ohio, was charged with misbranding a product called "Dr. W. H. Baker's Tubercular Remedy." The stuff contained 11 per cent. alcohol by volume, sugars, potassium iodid, ammonium chlorid, glycerin, licorice, plant extractives, etc. The claim that the product was a remedy and cure for tuberculosis was declared false and fraudulent, and Morgan was fined $25 and costs.—[*Notice of Judgment No. 4998.*]

Lee's Save the Baby Croup Specific.—Charles Samuel Ulcher and Carrie L. Ulcher, who traded as Wm. W. Lee & Co., Troy, N. Y., were charged with misbranding this preparation. According to the government chemists, the product was a liniment with a fatty oil base, and containing camphor, rosemary and thyme. The claim that it was a specific for croup and for saving the lives of babies affected with that disease was declared false and fraudulent.

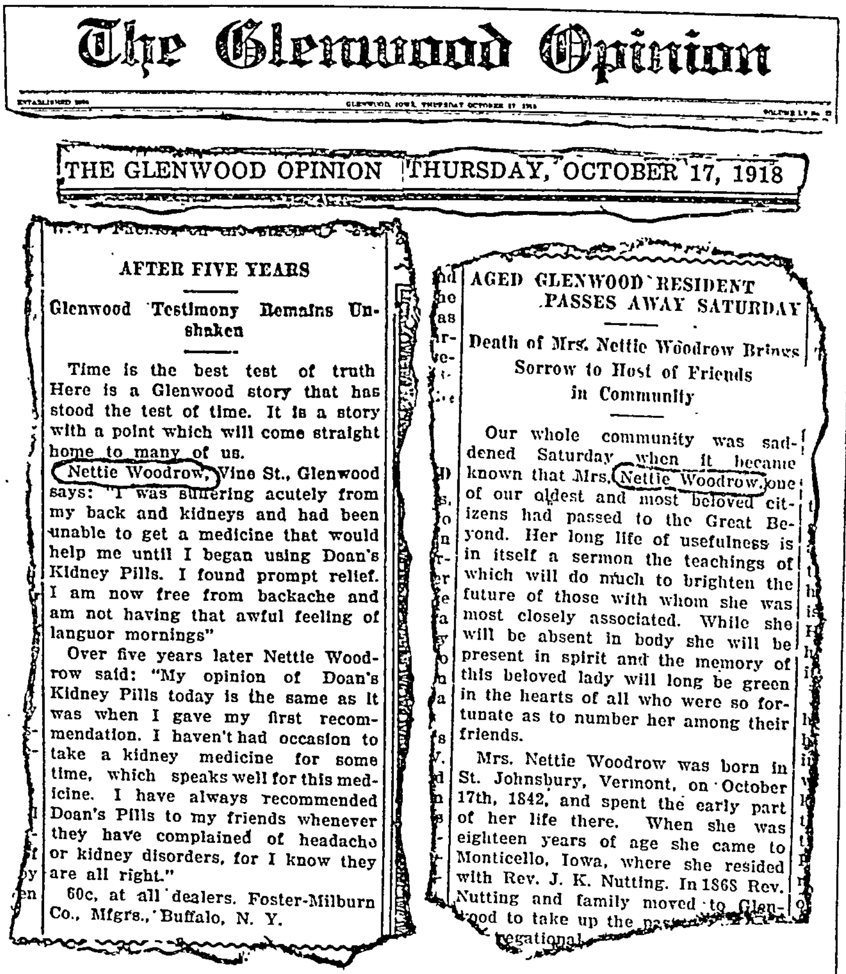
The same individuals were also charged with misbranding "Lee's Croup Mixture." which the government chemists reported contained over 70 per cent. of lard, about 7 per cent. alcohol, and more than 18 per cent. volatile oils, consisting of a mixture of oils of rosemary and thyme and camphor. This also was falsely and fraudulently represented to be a remedy for croup. The two Ulchers were fined $25.—[*Notice of Judgment No. 4999.*]

Twentieth Century.—This preparation was marketed by one Eva J. Powell of Findlay, Ohio, who traded under the name of the Twentieth Century Remedy Co. It consisted of a powder and a solution, the latter, according to the government chemists, being, essentially, a mixture of water, glycerin, lead and zinc sulphates, acetates, nitrates, and a small quantity of perfume. It was falsely and fraudulently represented to be a cure and preventive of gonorrhea and gleet. Eva J. Powell was convicted of misbranding and ordered to pay the costs of the proceedings.—[*Notice of Judgment No. 4982.*]

Moreau's Soothing Wine of Anise.—The Lafayette Co. of Berlin, N. H., shipped this product, which the government declared was being sold under false and fraudulent claims. The "soothing wine for children," according to the federal chemists, was a syrup containing morphin acetate and alcohol, and flavored with anise. It was falsely and fraudulently represented to be a remedy for diarrhea, dysentery, indigestion and vomiting of children. Furthermore, the package bore no statement regarding the quantity or proportion of morphin and alcohol. The company first pleaded not guilty, but later withdrew this plea and entered a plea of guilty; it was fined $25 and costs.—[*Notice of Judgment No. 4989.*]

Matthai's Victory.—Margarete E. Matthai of Baltimore, who did business as "Professor C. E. Matthai," sold a nostrum called, "Professor C. E. Matthai's Victory." The stuff contained 49 per cent. alcohol, 1.2 grains of opium to the fluidounce, and 3.5 per cent. camphor and volatile oil, and small amounts of red pepper. It was sold under claims that it was a remedy for diphtheria, cholera, rheumatism, scarlet fever, yellow fever, epilepsy, inflammation of the kidneys and bladder, diabetes and several other conditions. These claims the government declared were false and fraudulent. It was further misbranded in that the amounts of alcohol and opium declared on the label were less than the quantities actually present. The defendant was fined $100 and costs.—[*Notice of Judgment No. 4983.*]

MORE DOAN'S TESTIMONY FROM THE TOMBS



The Glenwood Opinion

THE GLENWOOD OPINION | THURSDAY, OCTOBER 17, 1918

AFTER FIVE YEARS

Glenwood Testimony Remains Unshaken

Time is the best test of truth Here is a Glenwood story that has stood the test of time. It is a story with a point which will come straight home to many of us.

Nettie Woodrow, Vine St., Glenwood says: "I was suffering acutely from my back and kidneys and had been unable to get a medicine that would help me until I began using Doan's Kidney Pills. I found prompt relief. I am now free from backache and am not having that awful feeling of languor mornings"

Over five years later Nettie Woodrow said: "My opinion of Doan's Kidney Pills today is the same as it was when I gave my first recommendation. I haven't had occasion to take a kidney medicine for some time, which speaks well for this medicine. I have always recommended Doan's Pills to my friends whenever they have complained of headache or kidney disorders, for I know they are all right."

60c, at all dealers. Foster-Milburn Co., Mfgrs., Buffalo, N. Y.

AGED GLENWOOD RESIDENT PASSES AWAY SATURDAY

Death of Mrs. Nettie Woodrow Brings Sorrow to Host of Friends in Community

Our whole community was saddened Saturday when it became known that Mrs. Nettie Woodrow, one of our oldest and most beloved citizens had passed to the Great Beyond. Her long life of usefulness is in itself a sermon the teachings of which will do much to brighten the future of those with whom she was most closely associated. While she will be absent in body she will be present in spirit and the memory of this beloved lady will long be green in the hearts of all who were so fortunate as to number her among their friends.

Mrs. Nettie Woodrow was born in St. Johnsbury, Vermont, on October 17th, 1842, and spent the early part of her life there. When she was eighteen years of age she came to Monticello, Iowa, where she resided with Rev. J. K. Nutting. In 1868 Rev. Nutting and family moved to Glenwood to take up the pas
...gational

"Here is a Glenwood Story" says a Doan's Kidney Pills advertisement, "with a point which will come straight home to many of us." How true! The advertisement appeared in the Glenwood (Ia.) *Opinion* of Oct. 17, 1918, relative to Nettie Woodrow's use of Doan's Kidney Pills. On another page of the same issue was an obituary notice of Nettie Woodrow. As the Doan's advertisement sagely remarks: "Time is the best test of truth." The Journal has, at various times, published unfortunate coincidences similar to the one above. Doubtless it could publish more, did the Doan's concern not instruct newspapers which carry its advertising to return advertising "copy" containing testimonials of local people who have died!

Sensapersa.—This product was marketed by one Stephen Britton of New York City, who did business as the Brown Export Co. "Sensapersa," according to the government chemists, consisted of purple colored tablets containing asafetida, cannabis indica, and a drug containing a mydriatic alkaloid such as hyoscyamus. It was falsely and fraudulently represented to be a cure for "nervous trouble" and a remedy for neurasthenia, nervous prostration, nervous debility, etc. Britton was fined $50.—[*Notice of Judgment No. 4984.*]

When the valve lever is in line with the right hand tube, the sound enters the left ear, and vice versa. In other words, the sound is excluded from the side corresponding to the long axis of the lever. A midway position excludes from both ears. The valves work rather stiffly at first and the screw should be loosened and oiled if necessary. For voice tests the ordinary stethoscope bell may be used, or a small funnel may be substituted if the bell is too small.

For testing with tuning forks, the chest-piece with a hard rubber diaphragm has proved most satisfactory, and transmits the sound very well. Only the lower pitched forks (128 and 256) should be used, since it is difficult to exclude forks of higher pitch. If necessary to use these or the conversational voice, a long tube (6 or 8 feet) may be connected with the apparatus. At this distance the ear-pieces will prevent the entrance of the sound except through the channels desired. The three-way valves are very inexpensive and may be obtained from any supply house.

John Leshure, M.D., New York.

PROMOTION WITH LOSS OF INCOME

To the Editor:—In your information to prospective medical officers regarding pay, commutation of quarters for dependents, etc., there is one contingency, one throw of the dice, that may knock out these calculations.

I entered the service sixteen months ago. I am 45 years old and have a wife and five children. I was at San Francisco and Camp Fremont as a first lieutenant up to last month. Since April 15 I have been allowed commutation for my family in the state of Washington, which brought my check up to $203.28 a month.

I was sent to the Canal Zone and found on arrival I was a captain. I also found that there are quarters "to burn" at all the camps here. It will take between $400 and $500 to move my family down here any way I figure it, as they would have to come to New Orleans, 3,300 miles by railway, to meet a transport and probably have to wait a week or more in that city. The Pacific Mail charges $135 a ticket from San Francisco, and it would require three tickets, and there would be about $75 additional from Washington to San Francisco. I find myself in a big castle of a house all alone and a monthly check of $200 as a captain instead of my $203.28 as first lieutenant. No assurance can be had as to how long I shall be left here, so you can see that after we have all existed fourteen months on a lieutenant's pay I cannot take the chance of paying out so much money to transport my family here and possibly in a short time have to take them back. Besides, we own our home, which would probably stand idle.

So this proposition is a kind of a joke on me. But I am not kicking or complaining—only hoping the war will soon be over and that I can go home.

If you should find any reason for publishing any of this, please omit my name and city.

K. O. P.

Queries and Minor Notes

Anonymous Communications and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted, on request.

DIRT AND CARBON REMOVER

For cleaning the hands after machine work and the skin locally for hypodermic medication, and for removing carbon from the cylinders of automobiles, I use a mixture of:

Denatured alcohol.
Volatile oil of turpentine (ordinary turpentine) of each......2 ounces
Ether .... 3 drams

Mix turpentine and alcohol, shake and add the ether.

From one half to one ounce is put in the cooled cylinders of the automobile and allowed to stand two or more hours. The mixture fires quickly and blows out the carbon with a good speed.

F. U. Ferguson, M.D., Gallitzin, Pa.

Medical Education and State Boards of Registration

COMING EXAMINATIONS

Arkansas: Little Rock, Nov. 12-13. Sec., Regular Bd., Dr. T. J. Stout, Brinkley, Ark.; Sec., Eclectic Bd., Dr. C. E. Laws, 803½ Garrison Ave., Ft. Smith.

Connecticut: New Haven, Nov. 12-13. Sec., Regular Bd., Dr. C. A. Tuttle, 196 York St., New Haven; Sec., Eclectic Bd., Dr. James E. Hair, 730 State St., Bridgeport; Sec., Homeopathic Bd., Dr. E. C. M. Hall, 82 Grand Ave., New Haven.

Delaware: Wilmington, Dec. 10-12. Sec., Dr. H. W. Briggs, 1026 Jackson St., Wilmington.

Florida (R.): Miami, Dec. 2-3. Sec., Dr. W. M. Rowlett, Citizens Bank Bldg., Tampa.

Illinois: Chicago, Dec. 9-11. Mr. F. C. Dodds, Supt. of Registration, Springfield.

Iowa: Des Moines, Dec. 10-12. Sec., Dr. G. H. Sumner, Capitol Bldg., Des Moines.

Louisiana: New Orleans, Dec. 2-4. Sec., Dr. E. W. Mahler, 730 Audubon Bldg., New Orleans.

Maine: Portland, Nov. 12-13. Sec., Dr. Frank W. Searle, 776 Congress St., Portland.

Maryland: Baltimore, Dec. 10. Sec., Dr. J. McP. Scott, 137 W. Washington St., Hagerstown.

Massachusetts: Boston, Nov. 12-14. Sec., Dr. Walter P. Bowers, No. 1 Beacon St., Boston.

Nebraska: Lincoln, Nov. 13. Sec., H. J. Lehnhoff, 514 First Natl. Bk. Bldg., Lincoln.

Ohio: Columbus, Dec. 3-5. Sec., Dr. H. M. Platter, State House, Columbus.

South Carolina: Columbia, Nov. 12. Sec., Dr. A. Earle Boozer, 1806 Hampton St., Columbia.

Texas: Dallas, Nov. 19-21. Sec., Dr. M. F. Bettencourt, Mart.

Virginia: Richmond, Dec. 10-13. Sec., Dr. J. W. Preston, 215 S. Jefferson St., Roanoke.

West Virginia: Charleston, Nov. 19-21. Sec., Dr. S. L. Jepson, Masonic Bldg., Charleston.

Iowa July Reciprocity Report

Dr. G. H. Sumner, secretary of the Iowa State Board of Medical Examiners, reports that 7 candidates were licensed through reciprocity at the meeting held July 15, 1918. The following colleges were represented:

College	LICENSED THROUGH RECIPROCITY	Year Grad.	Reciprocity with
Bennett Medical College		(1914)	Illinois
Northwestern University	(1905)	(1913)	Illinois
American Medical Missionary College		(1904)	Illinois
National University of Arts and Sciences		(1913)	Illinois
St. Louis College of Physicians and Surgeons		(1911)	Missouri
University of Nebraska		(1904)	Nebraska

Washington July Examination

Dr. C. N. Suttner, secretary of the Washington State Board of Medical Examiners, reports the written examination held at Tacoma, July 2, 1918. The examination covered 11 subjects and included 110 questions. An average of 75 per cent. was required to pass. Of the 38 candidates who took the physician's and surgeon's examination, 30, including 2 osteopaths, passed, and 8, including 2 chiropractors, failed. Ten candidates were granted osteopathic licenses. The following colleges were represented:

College	PASSED	Year Grad.	Per Cent.
College of Medical Evangelists		(1918)	94.3
College of Phys. and Surg., Los Angeles		(1918)	85, 87.5
College of Phys. and Surgs., San Francisco		(1918)	92.4
George Washington University		(1905)	89.2
Hahnemann Medical Coll. of the Pacific		(1914)	89.1
Bennett Medical College		(1915)	88.8
Jenner Medical College		(1917)*	85.7
Northwestern University	(1913) 91.2; (1918) 87.2,		92.5
Rush Medical College	(1903) 83.1;	(1918)†	92.5
University of Illinois		(1913)	89.8
Maryland Medical College		(1911)	79.4
Middlesex College of Medicine and Surgery		(1917)	83.4
St. Louis University		(1918)	94.3
University of Buffalo		(1910)	85.6
Medical College of Ohio		(1896)	81.9
		(1918) 85.3,	85.5
Univ. of Ore.	(1906) 88.4; (1910) 84.1; (1912) 84.9;	(1917)	89.6
Vanderbilt University		(1911)	89.9
University of Toronto		(1917)	83.1
Tokyo Charity Hospital Spec. Med. School		(1896)	85.5
University of Christiania			

* Graduation not verified.
† Degree withheld pending completion of hospital internship.

	FAILED		
Rush Medical College		(1883)	62.1
Baltimore Medical College		(1891)	59.8
University of Maryland		(1898)	39.3
Saginaw Valley Medical College		(1902)	63.5
Kansas City Medical College		(1889)	52.1
Western University		(1907)	69.9

Book Notices

Radiography and Radio-Therapeutics. By Robert Knox, M.D., M.R.C.S., L.R.C.P., Consulting Radiologist, Great Northern Central Hospital, London. Part II: Radio-Therapeutics. Cloth. Price, $6.50. Pp. 606, with 115 illustrations. New York: The Macmillan Company, 1918.

This volume is devoted to both roentgen and radium therapy. The action of radiations on normal and pathologic tissues is dwelt on at some length. The roentgen armamentarium suitable for therapeutic use is described, as are also the methods of protection for patient and operator, the means used to estimate dosage, and the use of filters. Rather scant mention is made of the Coolidge tube—not at all commensurate with its importance and value in modern roentgen therapy. The chapters devoted to the various conditions suitable for treatment and the technic employed are also rather condensed. The physics of radium is dwelt on in detail by C. E. S. Phillips. The practical application of radium to disease, including the various methods of using it, the dosage and the conditions amenable to its action, is thoroughly covered. A chapter on the combined use of radium and roentgen rays in the treatment of malignant disease gives some relative values of the two agents in different conditions. The equipment of a radiotherapeutic department to meet the needs of military practice is described, as are also the types of cases encountered in such practice. In a chapter on the value of radiations in plastic surgery of the face and jaws, by Percival P. Cole, special attention is called to the value of the depilating effects of radiation when flaps from hairy parts are use to cover defects in nonhairy parts, and to the softening effects in old scars and keloids developing in such scars.

Clinical Disorders of the Heart Beat. A Handbook for Practitioners and Students. By Thomas Lewis, M.D., F.R.S., D.Sc., Physician of the Staff of the Medical Research Committee. Fourth edition. Cloth. Price, $2.25. Pp. 120, with illustrations. New York: Paul B. Hoeber, 1918.

This is essentially a reprint of the third edition, yet new facts are added here and there in a few words or a short paragraph, or some modification of statement is made so that it may justly be stated that there has been a careful revision. The worth of the volume has been many times declared by teachers and reviewers, and is plainly attested by the demand for the fourth edition. Not the least valuable feature is the preface, which clearly sets forth the debt owed by cardiology to the electrocardiograph and polygraph, but which also points out the fact that without these instruments of precision the general practitioner, by understanding the processes underlying cardiac irregularities, may recognize and intelligently treat these otherwise puzzling conditions.

Farmers' Clean Milk Book. By Charles Edward North, M.D., Director, North Public Health Bureau, New York City. Cloth. Price, $1.00 net. New York: John Wiley & Sons, 1918.

This little book is intended primarily for the use and instruction of the progressive farmer. It is fully illustrated with photographs, and will doubtless be of material service in furthering the production of sanitary milk. Chapter 12, entitled "The Dairy Man More Important than the Dairy," describes a striking instance of the production of milk with a low bacterial count by simply shifting milkers from one farm to another. The book will be appreciated by all interested in the production of clean milk.

Elements of Hygiene and Public Health. For the Use of Medical Students and Practitioners. By Rai Bahadur Jaising P. Modi, L.R.C.P. & S., L.F.P.S., Lecturer on Medical Jurisprudence, Hygiene, Chemistry and Physics, Agra Medical School. With an Introduction by Lieut.-Col. E. J. O'Meara, F.R.C.S., D.P.H., I.M.S., Principal, Agra Medical School. Cloth. Price 4 rupees net. Pp. 337, with 69 illustrations. Calcutta: Butterworth & Co., 1918.

This book is written with special reference to conditions existing in India and the East. It is intensely practical, and the numerous "shoulds" and "should nots" make evident the class of reader for whom it is intended. The directions given for furthering sanitation and preventing disease are, on the whole, clear and sensible. The book contains an important chapter on village sanitation and one on fairs, famine camps and poorhouses, both of which deal in detail with the peculiar conditions in India. Altogether, the book ought to be of great service to those directly concerned with Asiatic conditions of life. The paper used in the book deserves special mention; it is so thin that much valuable material is included in a relatively small bulk, and yet sufficiently opaque as to make it easy to read. The book is printed in India, and evidently this is true "Indian" paper.

Medicolegal

Automobilist Liable on Verbal Promise to Pay for Care of Injured Boy

(Banfield v. Davidson (Texas), 201 S. W. R. 442)

The Court of Civil Appeals of Texas affirms a judgment in favor of Plaintiff Davidson for $291.45, the amount sued for, for the care and treatment at his hospital of a boy, named Johnny Van, who was injured and brought there by defendant Banfield. The court thinks there was sufficient evidence to support a finding by the jury that the defendant negligently ran his automobile against the boy, who was at the time riding a bicycle, and that by such negligent act the boy's leg was broken, and other injuries inflicted on his body; that the boy was immediately taken by the defendant to the plaintiff's hospital, and that on reaching the hospital the defendant told the plaintiff to take the boy into his hospital and give him all necessary attention, and to try to save his life, and that the defendant would pay the plaintiff for such services, etc.; that the plaintiff did take the boy into his hospital on such request of the defendant, and did give him all necessary medical treatment and hospital accommodations and attention, as requested by the defendant, for about six weeks, and that such medical services, etc., were reasonably worth $291.45.

The defendant denied making any such promise, either expressly or by implication, and said further that if he did make such promise the same was verbal only and not in writing, and that as the sum due the plaintiff was the debt of Johnny Van, and not the debt of the defendant, the defendant could not be held liable therefor, and he specially pleaded the statute of frauds, which provides that no person shall be held liable for the debt, default or miscarriage of another, unless such person shall by some agreement or memorandum in writing, signed by the promisor or by some person by him authorized, promise to pay such debt, default or miscarriage of the other. But the court holds that the agreement to pay the plaintiff for his services was an original undertaking of the defendant. There was no contention by either party that it was alleged in the pleadings of either party or shown by the evidence that medical services or hospital accommodations given to Johnny Van were first performed, and thereafter a promise was made by the defendant to pay the reasonable value for such services, etc. There was no evidence calling for a charge on the statute of frauds. The cause of action alleged and proved was not within the statute of frauds.

The trial court gave the jury the following special charges requested by the plaintiff:

> A promise to pay for services rendered to a third person at the promisor's request is an original undertaking, not within the statute of frauds. Therefore, if you find from the evidence in this case that defendant promised to pay plaintiff for the services rendered Johnny Van, if any, by plaintiff, and that such services were rendered said Johnny Van at the request of defendant, then such promise need not be in writing, and defendant would be liable to pay for the reasonable value of such services, and if you so find by a preponderance of the evidence, you will find for the plaintiff in such amount as you may find the reasonable value of such services. . . .
>
> Where one does for another that which the other is legally obligated to do, the law not only implies a previous request that the thing should be done, but a promise to compensate. Therefore, if you find in this case that defendant was driving his car at a reckless and

at times indicates that the basic lesion is susceptible of repair, wherever situated. Porter's conclusions relative to fat embolism, enforced inhalation of carbon dioxid, were apparently largely founded on examination of cases a good many hours after injury. Lowering of the alkali reserve in the blood after anesthesia and operative attacks, and the beneficial effect of intravenous use of alkaline solutions have seemed to indicate a possible relation between shock and acidosis. Henderson and Haggard see a suggestive cause of surgical shock in a connection between the excessive respiration due to pain and the carbon dioxid capacity or alkali reserve of the blood. For prevention of shock there must be avoidance of fall of blood pressure, prevention of pain, and control in severity of traumatism. Ether, the most satisfactory of the usually inhaled anesthetics, is said to reduce blood pressure, and is toxic to nerve tissue and glandular organs. Nitrous oxid with ether following, or in association with nerve blocking, is at times available. Geoffrey Marshall uses nitrous oxid gas with oxygen to lessen shock in amputation. He says that shock evades exact definition. I fear his experience is more that of an anesthetist than of an operating surgeon. Porter finds that a diastolic blood pressure of from 45 to 50 mm. continued for a considerable time in a laboratory animal is followed by death by transfer of blood to the portal veins unless the animal is saved by surgical treatment. Treatment, therefore, requires that the blood pressure of the wounded, in war or civilian practice, be raised above the critical point. Elevation of the feet and intravenous injection of saline solution will raise diastolic blood pressure to 70 or 80 mm.; such procedure is to be used in addition to elevation of legs and trunk. Epinephrin may be employed in addition if the pressure falls again. Too much saline solution may increase hemorrhage in oozing wounds, unless hemostasis or operation and hemostasis have been successfully employed. Transfusion of blood is then acceptable, but hemostasis must also be looked after. External heat is of the highest importance. Pressure is to be made on the wound and not by tourniquet above the wound. Geoffrey Marshall's objection to morphin is probably founded on anesthetic observations rather than on the study of clinical surgery as an operating surgeon. C. L. Gibson of New York strongly advises the use of morphin to prevent shock, stating that its generous use makes the journey of the wounded man to the next station comfortable; also that it has been found to be of great value previous to operations with a marked effect in diminishing shock. The preliminary hypodermic use of morphin and atropin will probably convince operators that Geoffrey Marshall's objection to ether in amputation cases is probably not well founded. Surgeons must remember that saline solution is not well absorbed in shock cases; it may take some time to get the beneficial effect of gravity and intravenous medication. Frequent blood pressure observations combined with temperature observations will determine the indications for cessation or diminution of activity in treatment.

DISCUSSION

Dr. S. J. Meltzer, New York: The theory of acapnia assumes that shock is due to a diminution of carbon dioxid in the blood of patients in shock. This assumption suggests the treatment—letting the patient breathe some carbon dioxid or respire through a long tube or, as it is termed for short, rebreathing. If the statement that the carbon dioxid of the blood is decreased in shock were generally confirmed, the fact of the reduction of carbon dioxid could not prove the correctness of the acapnia theory. The reduction of carbon dioxid may merely be a consequence of shock and not the cause of it. Geoffrey Marshall, an expert anesthetist, is of the opinion that rebreathing is rather a dangerous procedure and ought not to be used in shock patients. Acapnia and rebreathing, as far as the science of physiology is concerned, are dying. Cannon studied shock experimentally as well as clinically. He believes that the most essential factor in the production of shock is acidosis and advocates the treatment of shock by the administration of sodium bicarbonate. Bayliss gave up the idea that acidosis is of primary importance in shock, and lost faith in the value of the alkaline treatment of shock. The theory that shock is produced by pulmonary fat embolism received a great deal of attention. No doubt there are cases in which fracture of the long bones or injuries to fat tissues lead to pulmonary fat embolism and to a dangerous and even to a rapidly fatal fall of blood pressure. But these facts are in no way new. Fat embolism, a grave condition, presents a number of definite clinical symptoms outside of the presence of low blood pressure. There are, in the first place, symptoms that point directly to the lungs as the seat of trouble. The patient is suffering from air hunger, dyspnea; pulmonary edema and even hemoptysis are frequently present. On auscultation, râles may be discovered. Fat is present in the circulation in abnormal quantities. The urine contains fat globules. Even the sputum may reveal fat. Porter recommends the inhalation of carbon dioxid for the treatment of shock, and reports that he has helped many such patients by this treatment. Porter administers carbon dioxid not for the purpose of meeting the possible exigencies of acapnia but for the purpose of producing deep inspirations, which would help drive the blood from the engorged abdominal veins into the half empty heart. Wiggers says that if the circulation from the right ventricle is impeded by capillary emboli in the lungs, the introduction of larger quantities of blood into the right ventricle might lead to the dilatation of that ventricle and to death. According to Wiggers, shock is distinguishable from pulmonary fat embolism by the difference of the pressure in the right ventricle and the pulmonary artery; in pulmonary fat embolism the pressure is rather high, while in shock it is low. Therefore, while in shock it is advisable to drive the blood from the veins of the abdominal cavity into the right ventricle, this procedure has to be avoided in cases of pulmonary fat embolism. Neither Porter's theory of shock nor his therapeutic advice rendered a practical service to medicine.

The Ductless Glands in Military Practice

Dr. Charles E. de M. Sajous, Philadelphia: So far as recruits are concerned, proper recognition of the diseases of the ductless glands and their treatment would enable a large proportion of men now deemed unfit to continue their service. As for the armies in the field, it is a question of life and death in the large proportion of cases of disease of the suprarenals or of the thyroid, including many cases of so-called "soldier's heart," as regards the latter organ. All this should be taken to heart by our military authorities, if their excellent work in other directions is to encompass all fields of suffering.

DISCUSSION

Dr. John A. Lichty, Pittsburgh: In considering the disturbances of internal secretion there are always two points that come out necessarily. One of these is the early recognition of disturbance of function in typical cases; the other is the recognition of the aberrant cases. The treatment depends entirely on the stage at which the case is met. In the thyroid or other glands of internal secretion, if a case is met at a time when only the vegetative nervous system is affected, surgery, of course, is not to be considered. These are the cases in which rest is the factor. If the condition gets to a certain point where neither of these factors, rest, forced feeding or the administration of an internal secretion are helpful, when it has gone beyond our control, we might say, then, of course, some direct effect on the gland itself will have to be brought about; and under these circumstances, surgery will no doubt be called into play.

Dr. E. Bosworth McCready, Pittsburgh: The reports of the Army medical examiners show how prevalent are organic and functional defects of development among the adult male population. Surveys of large groups of children have shown the existence of malnutrition to an almost incredible degree. It is to a large extent these malnourished, asthenic children who later develop glandular anomalies. Food quality and food quantity is a factor in metabolism, but only a factor. Metabolism depends on a proper balance of all physiologic functions, particularly on those of the ductless glandular apparatus. Preventive treatment should begin before the child is born, through proper parental care, including, when indicated, the administration of ductless gland preparations to the mother.

(To be continued)

Current Medical Literature

AMERICAN

Titles marked with an asterisk (*) are abstracted below.

American Journal of Diseases of Children, Chicago

October, 1918, **16**, No. 4

1 Puericulture in France. M. P. Strauss, Paris, France.—p. 207.
2 Red Cross Infant Mortality Campaign in France. W. P. Lucas (San Francisco), Paris, France.—p. 212.
3 Work of Children's Bureau of American Red Cross in Lyons. C. G. Grulee (Chicago), Paris, France.—p. 220.
4 Public Health Problem in France. C. F. Gelston (San Francisco), Paris, France.—p. 226.
5 American Red Cross in Meurthe-Et-Moselle. M. Ladd (Boston), Paris, France.—p. 236.
6 America's Debt to France. J. H. M. Knox, Jr. (Baltimore), Paris, France.—p. 242.
7 Massachusetts Child Conservation Committee: Details of Organization and Work. R. M. Smith, Boston.—p. 253.
8 Etiology of Phlyctenular Disease of Eye. H. F. Hansell, Philadelphia.—p. 262.
9 Is Amount of Calcium Usually Given in Dilutions of Cow's Milk Injurious to Infants? A. W. Bosworth, H. I. Bowditch and L. A. Giblin, Boston.—p. 265.
10 Bearing of Cutaneous Hypersensitiveness on Pathogenicity of B. Abortus Bovinus. E. C. Fleischner and K. F. Meyer, San Francisco.—p. 268.

American Journal of Obstetrics and Diseases of Women and Children, York, Pa.

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11 New Psychology Applied to Neuroses of Gynecology. W. P. Graves, Boston.—p. 497.
12 Indications and Limitations of Induction of Labor. R. C. Norris, Philadelphia.—p. 507.
13 Positive Wassermann Reaction which Changes to Negative at Termination of Pregnancy. M. L. Menten, Pittsburgh.—p. 514.
14 Red Degeneration of Fibroids During and Following Pregnancy. H. Schiller, Chicago.—p. 519.
15 Funnel Pelvis. Report of One Hundred and Six Cases. H. Williamson, New York.—p. 528.
16 Delivery Room Technic. S. B. Blakely, Binghamton, N. Y.—p. 537.
17 Efficient and Inexpensive Incubator. H. Thoms, New Haven, Conn.—p. 542.
18 Scopolamin-Morphin Amnesia in Labor. W. R. Livingston, Oxnard, Calif.—p. 544.
19 A Uterine Cancer: Its Diagnosis. P. B. Bland, Philadelphia.—p. 554.
20 Plea for Prenatal Care and End-Results of Hygiene of Pregnancy. J. R. Garber, Birmingham, Ala.—p. 566.
21 Advantages of Rectal Over Vaginal Examinations During Labor. R. A. Bartholomew, Atlanta, Ga.—p. 576.
22 Diagnosis of Ectopic Pregnancy. F. A. Rhodes, Pittsburgh.—p. 580.
23 Rupture of Uterus. R. Y. Sullivan, Washington, D. C.—p. 589.
24 Use of Douche Pan in Second and Third Stages of Labor. C. J. Andrews, Norfolk, Va.—p. 595.
25 Case of Staphylococcus Albus Puerperal Infection and Psychosis. S. B. Schenck, Brooklyn.—p. 596.

Archives of Internal Medicine, Chicago

October, 1918, **22**, No. 4

26 *Clinical Study of Pneumonia at Fort Riley Base Hospital. W. J. Stone, Toledo, Ohio, B. G. Phillips and W. P. Bliss, New York.—p. 409.
27 *Pneumonia and Empyema at Camp Sevier. W. T. Vaughan (Ann Arbor, Mich.), and T. G. Schnabel (Philadelphia), Camp Sevier, S. C.—p. 440.
28 *Treatment of Bronchial Asthma with Proteins. I. C. Walker, Boston.—p. 466.
29 Influence of Acid Phosphate on Elimination of Ammonia in Urine. W. McK. Marriott, St. Louis, and J. Howland, Baltimore.—p. 477.
30 Botulism; Report of Cases Occurring in Pacific Coast States. E. C. Dickson, San Francisco.—p. 483.
31 Nature and Interpretation of Colloidal Gold Reaction. K. M. Vogel, New York.—p. 496.
32 *Clinical Study of One Hundred and Fifty Cases of Bronchial Asthma. F. M. Rackemann, Boston.—p. 517.

26. **Study of Pneumonia.**—Only completed cases of pneumonia treated at the U. S. Army Base Hospital, Fort Riley, Kan., from Oct. 18, 1917, to May 18, 1918, are included in this report on a series of 668 instances of lobar pneumonia, 181 instances of measles pneumonia, and twenty-two instances of bronchopneumonia. The total incidence for pneumonia was 4.5 per cent., with a mortality of 23 per cent. The mortality of lobar pneumonia without empyema was 12.7 per cent. The incidence of pneumonia in measles was 6.1 per cent., with a mortality of 45.8 per cent. The mortality of measles pneumonia without empyema was 32.5 per cent. Among the twenty-two instances of bronchopneumonia there were no empyemas, but there were two death, a mortality of 9 per cent.

The mortality with the same general plan of treatment varied from month to month in this series of pneumonias. The fatality of empyema likewise varied from month to month under the same general plan of treatment. The highest mortality in which empyema was the prominent associated pathologic condition occurred during the months of March and April. These were largely instances of overwhelming infection of rapid onset and death within a few days. The rapid onset of chill, fever and cough with tubular breathing and signs of consolidation, however small, sufficed, in the vast majority of cases, to establish the diagnosis. The roentgenogram may be of great help in making a diagnosis of questionable consolidation. In the diagnosis of bronchopneumonia some dependence should be placed on the history of previous bronchitis or measles. In the diagnosis of complications the aspirating needle was used early for the detection of empyema. Pus was frequently found without any increase in the temperature. The roentgen ray was of little help in small accumulations of fluid, but was of great help in outlining larger accumulations associated with fibrinoplastic pleural thickening. Pericarditis occurs frequently enough in pneumonia to make it an imperative rule to examine the heart with care at each visit. Serofibrinous pericarditis occurred clinically in approximately 4 per cent. of lobar pneumonias, in 2.2 per cent. of measles pneumonias. There were thirty-one instances. Twenty-four of the patients died. Pericarditis purulenta occurred only in association with empyema of subcostosternal pus pockets. Of this complication there were twenty instances, in all of which death occurred. Diphtheria was simulated in two instances by edema of the glottis incidental to a streptococcic infection. Acute peritonitis was diagnosed in five moribund patients in whom the condition was not found at necropsy.

Subcostosternal pus pockets were found in twenty-nine instances in 153 necropsies, and the diagnosis was not possible prior to death in any case, although the presence of such purulent accumulations were suspected in many instances from the combination of clinical and roentgen-ray evidence. This pocket of pus, which is usually situated on the side of the affected lung, but which may be bilateral, lies immediately beneath the sternum. It occupies the space between the median flap of lung composing the upper lobe as it lies above the fibrous layer of the pericardium. It is not in the mediastinum and should not therefore be called a mediastinal abscess. The pocket may communicate with other septal pockets or other portions of the pleura of the affected side. The vessels of the hilum may be its deepest limit or the opening to the pleura may occur through the normal pulmonary septa. This pocket is almost impossible to drain laterally, anteriorly or posteriorly by the usual thoracotomy or costatectomy. This pocket may be affected primarily and all other portions of the pleura be apparently free from pus while this one alone remains undrained and unhealed. The authors believe that the course of the infection is parietal rather than visceral, that it follows the lymph channels to the pleura from which afferent lymph vessels draining the anterior chest wall including the anterior parietal pleura, lead to sternal lymph nodes of which there are usually six on each side along the course of the internal mammary arteries. The pus pockets occur in close proximity to these nodes due undoubtedly to breaking down of these glandular structures. They have constituted a unique and very serious complication.

So-called toxic arthritis occurred in ten instances of empyema. Only one patient developed a suppurative arthritis in association with empyema in this series.

Blood cultures were taken from 100 patients with pneumonia, or suspected pneumonia, on admission. In one instance a hemolytic streptococcus was obtained from a patient with bronchopneumonia whose sputum also contained the same organism. In five instances a pneumococcus was obtained, in two of which the patients did not develop pneumonia. The cultures were sterile in 94 per cent. Sputum determinations as to type of infection were made in 428 completed cases of pneumonia. The hemolytic streptococcus was found in 28.2 per cent. of the cases; pneumococcus Type II, in 21 per cent. In 155 empyema fluids the hemolytic streptococcus was found in 68.4 per cent., the nonhemolytic streptococcus in 5.8 per cent. The mortality in empyema, due to the streptococcus, was 61.7 per cent., while in empyema, due to the pneumococcus, the mortality was 45 per cent. Cole Type I serum was administered in doses of 100 c.c. intravenously after desensitization in Type I lobar pneumonias. Its effect was, in a large percentage of cases, immediately beneficial. This serum was administered in twenty-seven of the thirty-two cases. Among those who received the serum there were four deaths (two had meningitis and one had bilateral empyema mentioned above). The mortality in the serum treated patients was therefore 14.8 per cent. The autolyzed pneumococcic antigen of Rosenow was used in seventy patients with lobar pneumonia not due to Type I pneumococcus. The mortality was 12.8 per cent. Among 219 completed instances of lobar-pneumonia in which the patients were discharged during the same period and not treated with the antigen, the mortality was 14.6 per cent. The dosage of the antigen, 1 to 2 c.c. daily, subcutaneously, for four or five doses, produces practically no reaction. Keys' antipneumococcic chicken serum was used in thirty cases of lobar pneumonia due to the pneumococcus. One death occurred, a mortality of 3.3 per cent., with an empyema incidence of 13.3 per cent. During the corresponding period the mortality of lobar pneumonia in patients not treated with this serum was 14.2 per cent. The serum seemed to possess value in reducing the toxemia in pneumonia.

Measles patients received, since Feb. 15, 1918, a vaccine prepared from five local strains of streptococci and two strains of Pneumococcus IV. The incidence of measles pneumonia, prior to the use of the prophylactic vaccine was 6 per cent. The incidence of measles pneumonia in 148 cases in which the prophylactic vaccine was used was 2 per cent. Antistreptococcus serum was used intravenously, after desensitization, in measles pneumonia due to the streptococcus with beneficial results in many instances.

The total number of empyema complications following pneumonia in this series was 200. Of this number 119 men were operated on. In the cases (eighty-three) in which early operation was done, not preceded by repeated aspirations, the mortality was 63.8 per cent. In the cases in which late operations were done, preceded by repeated aspirations, the mortality was 22.2 per cent.

27. **Pneumonia and Empyema.**—In lobar pneumonia the mortality for the entire period from the opening of the hospital at Camp Sevier until March 31, 1918, was 14.9 per cent. The highest number of deaths occurred during the early days of the hospital. In a period from Dec. 1, 1917, until March 31, 1918, during which more accurate records were kept, type determination was made, better methods of isolation were employed and the treatment was supervised in all wards by one person, the mortality was decidedly lower, being 10 per cent. In this second period nearly all of the cases fall, 201 out of 234. The death rate with Type I pneumonia is recorded as 14 per cent., and from Type IV as 7 per cent. There were no deaths among the eleven cases of Type II pneumonia. The Type I mortality includes both serum treated cases and those not so treated. In bronchopneumonia the death rate has been 36 per cent. Vaughan and Schnable consider Type I immune serum as being a most valuable addition in the treatment of pneumonia. It should be used in all cases of Type I infection; the earlier in the course of the disease the more satisfactory will be the results. Polyvalent serum was used in a few cases of severely ill bronchopneumonias and without beneficial results.

28. **Treatment of Bronchial Asthma with Proteins.**—The results of the treatment of 100 sensitive patients with the proteins to which they were sensitive are recorded by Walker. Of forty-eight patients who were sensitive to and treated with horse dandruff proteins, 63 per cent. were relieved of asthma, 10 per cent. have had too little treatment to warrant a prognosis, and 20 per cent. were relieved by vaccines or by omitting foods to which they were sensitive; in the remaining 7 per cent. of this group treatment was a failure. Of four patients who were sensitive to and treated with cat hair protein, three were relieved of asthma, and the other patient, who was equally sensitive to the horse dandruff proteins, was relieved by treatment with them. Of thirty patients who were sensitive to the cereal grains, 74 per cent. were relieved by the omission of these from the diet, and 7 per cent. were relieved by vaccines; of the 26 per cent. who were not relieved by the omission of cereals from the diet, in 16 per cent. there was no evidence that cereals played any part in the cause of asthma, but the presence of eczema may account for these positive skin tests. Of thirty-three patients who gave positive skin tests to other foods, 50 per cent. were relieved by the omission of these from the diet, 30 per cent. more were relieved of asthma, but as the latter were also sensitive to other proteins which were also omitted from the diet at the same time, it is difficult to give credit to any special protein. The remaining 20 per cent. were not relieved of asthma, but the presence of eczema and urticaria and an acquired distaste for certain foods probably explains the idiosyncrasy. Therefore, of the total number of 100 sensitive individual patients who were treated as indicated by the positive skin tests, in 75 per cent. there was relief from asthma, in 14 per cent., although there was no relief from asthma, there was a definite idiosyncrasy substantiating the positive skin test; but in 11 per cent. the positive skin test had no apparent bearing on the patient's condition, although in only half of these, or 5 per cent., was there evidence that the skin test gave a false result. Since the 11 per cent. includes 7 per cent. who were relieved by vaccines, a total of 82 per cent. of the sensitive patients were relieved from asthma.

32. **Bronchial Asthma.**—Some of Rackemann's conclusions may be summarized as follows: "Bronchial asthma" is a symptom of some other disease condition. The 150 cases of asthma studied can nearly all be divided, according to the etiology of their attacks, into various subgroups under the general headings of "extrinsic asthma" and "intrinsic asthma." Extrinsic asthma includes 28 per cent.; intrinsic asthma includes 53 per cent. of the entire group—the other 19 per cent. being unclassified. A history of either asthma, hay-fever or food poisoning, in the immediate family, occurs in 58.7 per cent. of the cases of extrinsic asthma, but in only 10.5 per cent. of the cases of intrinsic asthma. Skin tests are of great assistance in confirming the diagnosis. Skin tests alone are of no value unless reasonably compatible with the patient's history or experience. A positive skin test is a necessary preliminary to successful specific treatment. The "nervous" element is very important in asthma, but probably does not explain why certain individuals have asthma. Treatment resolves itself into the treatment of the exciting cause. Various different therapeutic procedures sometimes yield favorable results, but these cannot be explained. The real problem—what is the fundamental disturbance of anatomy or physiology which expresses itself by attacks of asthma—remains unsolved.

Boston Medical and Surgical Journal

Oct. 17, 1918, **179**, No. 16

33 Industrial Anilin Poisoning in Massachusetts; Cases. T. F. Harrington, Boston.—p. 497.
34 Infant Mortality; Theory and Results. D. M. Lewis, New Haven, Conn.—p. 501.
35 Some Special Problems in Abnormal Adolescent Psychology. O. L. Bridgman, San Francisco.—p. 505.

Bulletin of Johns Hopkins Hospital, Baltimore

October, 1918, **29**, No. 332

36 *Myrtol Poisoning; Toxicity of Eucalyptus Oil and Myrtol. L. F. Barker and L. G. Rowntree, Baltimore.—p. 215.
37 *Dakin's Solution and Dakin's Oil in Normal Peritoneal Cavity of Dog. E. G. Grey, Baltimore.—p. 221.
38 *Multiple Primary Malignant Tumors; Case of Carcinoma and Sarcoma in Same Person. R. H. Major, Rosedale, Kan.—p. 225.
39 Idiopathic Bacillus Aerogenes Capsulatus Infection. H. Greeley, Brooklyn.—p. 231.

36. **Myrtol Poisoning.**—Derivatives of plants belonging to the natural order *Myrtaceae*, and especially oil of eucalyptus

and myrtol, may in large doses cause profound intoxication. In certain persons, there is an idiosyncrasy, the symptoms of intoxication occurring after minute or therapeutic doses. The authors report one case and summarize thirty-five cases recorded in the literature. The intoxication may affect chiefly the nervous system (myrtogenic neuropathy) or chiefly the skin (myrtogenic dermatopathy); in some persons, nervous and cutaneous manifestations are simultaneously observable. Recovery occurs in most instances, though several fatalities following eucalyptus poisoning have been reported. The symptoms of intoxication of the nervous system observed in man can be reproduced in animals by subcutaneous and by intraperitoneal administration of myrtol.

The authors' patient suffered from bronchiectasis; bronchitis chronica putrida; peribronchitis fibrosa; pleuritis chronica dextra. In addition to general measures, 3 minims of myrtol in capsules thrice daily were prescribed on account of the fetid bronchitis. The patient had been taking some oil of eucalyptus and oil of sandalwood before. These he continued along with the myrtol. After having taken two capsules three times a day for eight days the face became discolored and large puffs came under each eye. The forehead looked as if it were going to break out with eczema. The left eye became nearly closed and the right partially closed from the swelling. The myrtol was stopped at once, but the swelling lasted for many days. The cough increased markedly and the heart's action became more rapid, and he was greatly depressed. The patient had been told to increase the dose of myrtol gradually until twelve capsules per day were taken, but the myrtol was stopped when only six capsules per day were ingested.

37. **Dakin's Solution and Dakin's Oil in Normal Peritoneal Cavity.**—Observations are reported by Grey in order to draw attention to the fact that the indiscriminate use of the chlorin antiseptics is not entirely devoid of danger. Both the neutral solution of chlorinated soda (Dakin's solution) and dichloramin-T in chlorinated paraffin (chlorcosane, N. N. R., "Dakin's oil"), when injected into the normal peritoneal cavity of a dog, led to an inflammatory reaction, the degree of which was directly proportional to the amount of chlorin antiseptic used. With a sufficient quantity (less chlorcosane suffices) death ensued. When either of the chlorin antiseptics was injected into the gallbladder of a dog no abnormal symptoms appeared. Following the injection of chlorcosane, however, the gallbladder becomes thickened and shrunken, though the remainder of the biliary tract shows no discernible changes. A small amount of chlorcosane, when injected into the normal pleural cavity of an unanesthetized dog, may lead to a rapid (reflex?) death.

Since chlorcosane, particularly, has been used without recognizable ill effects in certain infections of the abdominal cavity, the results from the experiments made by Grey suggest that the wall of an abscess cavity or sinus must play an important part in protecting the peritoneum in general from the effects of the free chlorin. They also suggest that the maintenance of an adequate drainage tract is an indispensable part of the technic for using antiseptics of this nature within the abdomen. Until more evidence is at hand, then, both of the chlorin antiseptics should be used in intra-abdominal infections with caution and certainly only in carefully selected cases.

38. **Multiple Primary Malignant Tumors.**—Major's patient was a woman, 60 years of age. She applied for treatment of a carcinoma involving the right side of the nose and extending to the inner canthus of the right eye. While in the hospital the patient complained a great deal of headache, had little appetite and at times talked irrationally. Death occurred rather unexpectedly. The necropsy disclosed a round-cell sarcoma of the stomach. Hence this is a case of two primary malignant growths being present in the same person at one time. One hundred and ninety-six references to similar cases are given by Major.

California State Journal of Medicine, San Francisco

October, 1918, **16**, No. 10

40 *Cerebrospinal Fluid Findings in Herpes Zoster. W. F. Schaller, San Francisco.—p. 453.
41 Is Purgation Justifiable? P. Campiche, San Francisco.—p. 455.
42 Pubiotomy. H. A. Stephenson, San Francisco.—p. 457.
43 Focal Renal Infections. L. J. Roth, Los Angeles.—p. 460.
44 Prevalence of Streptococcal Infections. R. L. Ash, San Francisco.—p. 462.
45 Method of Suturing "Y" Shaped Wounds. J. C. Egeberg, San Francisco.—p. 464.
46 Intestinal Obstruction: Case Occurring in Geophagist. H. A. Johnston, Anaheim.—p. 464.
47 Plea for Better Cooperation Between Physicians and Dentists. C. H. Wake, Los Angeles.—p. 466.

40. **Cerebrospinal Fluid Findings in Herpes Zoster.**—A lumbar puncture was performed in 21 cases of 79 cases of herpes by Schaller. In 14 cases in which a blood Wassermann alone was done 4 cases showed a positive reaction and 10 a negative reaction. The remaining 44 cases were not examined by the blood or fluid tests, nor were they clinically cases of syphilis. Nine occurred in syphilitic persons and in all but 1 of these the fluid showed a characteristic reaction of syphilis of the central nervous system. Eleven cases were negative for syphilis. However, in 5 out of these 11 cases there was a cellular increase above the normal. The globulin test in these 5 cases was negative or slightly increased. Schaller concludes that herpes zoster occurs with comparative frequency as symptomatic herpes in syphilis of the central nervous system. In nonsyphilitic herpes an increased cell count may mislead the clinician if other evidence suspicious for syphilis is brought out in the general survey of the case.

Canadian Medical Association Journal, Toronto

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48 Physiology of Intracranial Circulation. J. J. R. Macleod, Toronto.—p. 865.
49 Intracraniail Pressure. W. F. Hamilton, Montreal.—p. 873.
50 Surgical Relief of Increased Intracranial Pressure. A. E. Garrow, Montreal.—p. 882.
51 Acute Endocarditis in Pregnancy. G. S. Cameron, Peterboro, Ont.—p. 891.
52 Training of Surgeon. J. Halpenny, Winnipeg.—p. 896.
53 Botulism. E. C. Dickson.—p. 903.
54 After-Effects of Wounds of Chest and Their Treatment. J. Meakins and T. W. Walker.—p. 910.
55 Medical Inspection of Schoolchildren. D. J. Dunn, Edmonton, Alta.—p. 925.

Colorado Medicine, Denver

October, 1918, **15**, No. 10

56 Tasks Before Us E. Jackson, Denver.—p. 241.

Journal of Laboratory and Clinical Medicine, St. Louis

October, 1918, **4**, No. 1

57 *Ocular Lesions Produced by Dichlorethylsulphid (Mustard Gas). A. S. Warthin, C. V. Weller and G. R. Herrmann, Ann Arbor, Mich.—p. 785.
58 *Treatment of Dichlorethylsulphid (Mustard Gas). Injuries. A. S. Warthin, C. V. Weller, L. Roos and G. R. Herrmann, Ann Arbor, Mich.—p. 833.
59 *Blood Cholesterol in Malignant Disease and Effect of Radium on Blood Cholesterol. G. Luden, Rochester, Minn.—p. 849.
60 Methods for Preparing Isoamyl Isovalerate: Satisfactory Substance to Prevent Foaming. C. H. Fiske.—p. 865.

57. **Ocular Lesions Produced by Mustard Gas.**—Warthin and his associates made a very thorough experimental and clinical study of this subject. The results are presented in detail. Summarized they are as follows: The action of mustard gas on the cornea and conjunctiva is essentially the same as that on the skin. The conjunctiva is, however, less susceptible to the action, or better protected, as the degree of necrosis produced in it is always less than that in the cornea or the epidermis. Exposures to dilute concentrations of the vapor produce slight degenerations of the corneal and conjunctival epithelium followed by a simple conjunctivitis. The use of a 2 per cent. alkaline aqueous fluorescein solution in demonstrating the necrosis of the corneal epithelium within ten to fifteen minutes after exposure to gassing has great clinical value. Exposures to stronger concentrations produce a more or less complete necrosis of the corneal vertex, extending throughout the entire depth of the cornea. Purulent exudation in the anterior chamber may occur; but no changes except congestion and edema were observed in the posterior chamber or optic nerve in noninfected cases.

In severe cases iridocyclitis and iritis may occur without secondary infection. The conjunctival epithelium also suffers necrosis, and there results an intense edema of the subconjunctival tissues with marked congestion, multiple hemorrhages, leukocyte infiltration, and frequently secondary liquefaction necrosis. The depth of the necrosis in the conjunctiva is much less than that in the palpebral epidermis. This difference in degree of escharization can be explained, in part, by the penetration of the hair follicles on the skin surface, and in part by the moistness of the conjunctival surfaces and the lacrimation. A diffuse mild inflammation of the peribulbar tissues occurs, often with marked infiltration of the ocular muscles. No metastatic lesions of the eye could be produced experimentally by applications of mustard gas to other regions of the body, or by subcutaneous or intraperitoneal injections.

For the milder forms of mustard gas conjunctivitis the authors recommend immediate irrigation with the 0.5 to 1 per cent. chlorcosane solution of dichloramin-T followed by frequent irrigation with saturated boric acid solution. For the severe forms the same initial treatment followed by frequent irrigations with the dichloramin-T alternating with boric acid. They advise against the use of bandages or compresses bringing pressure on the eye, against the use of colloidal silver preparations, and against the use of cocain. During exposure to mustard gas vapor the dichloramin-T solution may be used as a prophylactic agent. Healing in the more severe forms results in vascularization and cicatrization of the cornea with marked disturbances in vision. Even in the milder forms of conjunctivitis, localized roughness or irregularity in the conjunctival surface may persist for weeks as the result of localized edema, hyperemia, cellular infiltration, etc. Serious refractive errors and reduction of vision result, even in mild cases. For the correction of the disturbances of vision the patient should be referred to a competent specialist.

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Inasmuch as mustard gas causes a necrosis, more or less deep, of the skin, cornea and conjunctiva, and mucous membrane of the respiratory tract, the therapeutic problems are as follows: 1. To sterilize the dead tissue and prevent infection of the eschar. 2. To prevent further necrosis by removing pressure. 3. To promote removal of the eschar and rapid regeneration and healing without secondary infections. The use of neutral solution of chlorinated soda suggested itself as an ideal method particularly, because the use of a chlorinating solution would also serve to destroy any mustard gas remaining in the skin, hair follicles, or sweat glands. The use of the bath method, as carried out in the treatment of severe thermal burns and necrotic and suppurative conditions of the skin, and especially, because of the danger of bedsores and secondary necrosis from pressure, is founded on the pathology of the lesions produced by mustard gas, and is based on scientific principles. In practice it has produced good results.

A. Mild Injuries.—Wash immediately, or better, *immerse* parts one half to two hours in neutral solution of chlorinated soda (strength of about 0.5 per cent. hypochlorous acid). If too irritating, dilute the solution or shorten time of immersion. If injured surfaces are very large, use full bath; for lesions of the genital region use *sitz bath. When immersion* of parts is not expedient, use dressings wet with or irrigate with neutral solution of chlorinated soda. *If the wet treatment* (which the authors consider *by far the best*) cannot be carried out, the application of dichloramin-T in chlorcosane or chloramin-T in sodium stearate *may* be used. These procedures will serve a double purpose of chlorinating and rendering inactive any dichlorethylsulphid remaining in the skin, hair follicles, etc., and also disinfecting the damaged skin surface. This primary disinfection of the skin is of very great importance in the prevention of the secondary infections that are so often of a serious character.

After the neutral solution of chlorinated soda, use wet dressings, irrigation or bath of sterile hypertonic saline (5 to 10 per cent.), alternating with the neutral solution of chlorinated soda, and a sterile physiologic saline, according to judgment, about as follows: Neutral solution of chlorinated soda one to two hours, hypertonic saline two hours, physiologic saline one hour, and then repeat until lesions appear and extent of injury can be determined. As long as the lesion remains an erythema continue this treatment during the daytime. At night, dry the skin under aseptic precautions, and apply a vanishing surgical cream containing hypochlorous acid or liberating chlorin, of the type of the chlorazene (chloramin-T, 1 per cent. in sodium stearate) surgical cream, or instead, use wet hypertonic saline dressings.

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In the case of vesicle formation, empty vesicles early under aseptic precautions, by means of a hypodermic syringe or sterile needle with slight pressure *on the vesicle,* and allow *intact vesicle wall to collapse and seal down on* its base. After this procedure, continue with alternating neutral solution of chlorinated soda and sterile salines, as above. If vesicles are not drained early, the fluid content may, within four to five hours, coagulate to such an extent that a large coagulum is formed that cannot be removed, and forms a possible medium for bacterial growth. It is very important that skin damaged by mustard gas be protected from trauma. Slight injuries, even ordinary pressures of the body, will cause the development of secondary vesicles or decubitus in the injured areas.

The use of unguents and ointments with oily bases, such as zinc stearate, olive oil, oleum petrolatum, or any form of crude petrolatum or other protecting oil, or such air-excluding and infection-including protectives as oiled paper, paraffin sprays and coatings, such as are employed in the treatment of thermal burns, *is strongly* condemned in the treatment of *dichlorethylsulphid injuries. The principle* of excluding the *air for the purpose of lessening pain* in the treatment of thermal burns *is not applicable here* because of the relative anesthesia *of the* dichlorethylsulphid lesions in their earlier stages. *Exceptions to the above rule are* the *sodium* stearate impregnated with chloramin-T and the chlorcosane solution of dichloramin-T, as in these cases there is an active and persistent germicidal agent present.

In the case of denuded surfaces with much pain and when *bedsores have developed,* the colloidal saline bath is strongly advocated. *This bath is made* as follows: Dissolve 1 pound of commercial *cornstarch* and 1 pound of sodium bicarbonate in *20* to *30* gallons of *sterile physiologic* salt solution, at a temperature of 90 to 95 F. The *patient* can be *left immersed* in this, when necessary, from fifteen *minutes to forty-eight* hours. The patient should be *constantly* watched by the nurse. Should pulse become weak, give *strychnin* or digipuratum or any other active digitalis *preparation,* or remove from bath, and apply blankets and heat.

B. Severe Injuries.—When necrosis of the *skin, more* or less extensive, develops, follow the same *line of* treatment given above: full bath, irrigation, slush or sponge bath, or wet packs of neutral *solution of* chlorinated soda, alternating with physiologic and *hypertonic* salines, or the colloidal bicarbonate bath should be constantly employed. Avoid bedsores. For this purpose the constant colloidal or saline bath, with patient hung in canvass body cradle to take off pressure should be used. It is of the greatest importance to protect the damaged areas from secondary trauma. In cases in which decubitus or sloughs occur the necrotic layer should be removed, either with sterile forceps or by means of frequent hot irrigations under pressure. For this purpose saline, neutral solution of chlorinated soda, 1:10,000 potassium permanganate solution, etc., should be used. If the necrotic areas have become infected through neglect or improper treatment, the use of neutral solution of chlorinated soda or a similar solution should be pushed, alternating with hypertonic saline baths.

A hyperchlorous solution made according to Carrel's method can be applied here with good results: To 1 liter of water add 12.5 gm. of bleaching powder, shake vigorously, then add 12.5 gm. of boric acid powder, and shake again. Allow the mixture to stand for some hours, preferably overnight, then filter off, when the clear solution is ready for use. This solution contains about 0.54 per cent. of hypochlorous acid, 1.28 per cent. calcium biborate and 0.17 per cent. calcium chlorid. This is about the most practical concentration of hypochlorous acid, as stronger solutions rapidly lose strength. When the patients are very weak, temperature rising, and infection progressing it may be advisable to employ tepid sponge baths of the foregoing solutions.

59. **Studies on Cholesterol.**—Cholesterol promotes cell multiplication; high blood cholesterol values must, therefore, says Luden, further malignant growth. High blood cholesterol values are commonly found in carcinoma. Radium treatment and the administration of the thyroid hormone both reduce the cholesterol content (Bloor I) of the blood, and increase the amount of changed cholesterol in the blood (namely, the difference between the Bloor I and II values). The high cholesterol values in myxedema are brought down to normal by the administration of the thyroid hormone at a rate parallel to the rise in basal metabolism induced by the latter.

Kansas Medical Society Journal, Topeka

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61 Case of Foreign Body (Lead Pencil) in Abdomen. A. O'Donnell, Ellsworth.—p. 237.
62 First Aid to Neurotic. M. S. Deland, Topeka.—p. 238.

Kentucky Medical Journal, Bowling Green

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63 Outlook for the Profession. J. S. Lock, Barbourville.—p. 432.

Maine Medical Association Journal, Portland

October, 1918, **9**, No. 3

64 Cancer Problem. L. D. Bristol, Augusta.—p. 57.

Minnesota Medicine, St. Paul

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65 Study of Seventy Cases of Cerebrospinal Meningitis. M. Seham, Minneapolis.—p. 372.
66 Modern Roentgen Ray Therapy. R. F. Bellaire, Sioux City, Iowa.—p. 380.
67 Pituitary Extract, Its Uses and Abuses. J. A. Broberg, Blue Earth.—p. 386.

New York Medical Journal

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68 Errors in Diagnosis of Pulmonary Tuberculosis. A. Trasoff, Philadelphia.—p. 665.
69 Endobronchial Treatment of Bronchiectasis and Bronchial Abscess. E. Mayer, New York.—p. 666.
70 Neurotic Symptoms Referred to Eyes. C. P. Oberndorf, New York.—p. 668.
71 Intestinal Stasis, Ileocecal Valve Incompetency, and Chronic Appendicitis Roentgenologically Considered. J. S. Diamond. New York.—p. 672.
72 Paget's Disease of Bones; Two Cases. B. Stivelman, New York, and E. L. Ray, Louisville, Ky.—p. 678.
73 Argyrol Treatment of Acute Anterior Gonorrhea. C. B. Adams, New York.—p. 679.
74 Functional Reeducation of Wounded. R. T. McKenzie, Philadelphia.—p. 683.

New York State Journal of Medicine

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75 Surgical Treatment of War Wounds. C. L. Gibson, New York.—p. 345.
76 Reception and Distribution of Cases in Casualty Clearing Station. E. W. N. Wooler.—p. 347.
77 Some Principles of Treatment of Gunshot Wounds. C. H. Upcott.—p. 350.
78 The Wilson Splint in Treatment of Gunshot Wounds of Humerus.—p. 354.
79 Control of Infection in War Wounds. W. Martin, New York.—p. 354.
80 Early Diagnosis of Intralaryngeal Carcinoma. D. B. Delavan, New York.—p. 360.
81 Surgical Treatment of Cancer of Larynx; Report of Cases. J. McCoy, New York.—p. 363.
82 Treatment of New Growths of Larynx by Internal Surgical Methods. H. Arrowsmith, Brooklyn.—p. 368.
83 Conservative Surgery of Chronic Intestinal Stasis. F. C. Yeomans, New York.—p. 374.
84 Estimation of Cardiac Strength and Importance of Conserving Energy During and Following Operations. R. R. Huggins, Pittsburgh.—p. 380.

Northwest Medicine, Seattle

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85 Some Suggestions Looking to Improvement of Public Health by General Practitioner. W. F. Smith, Boise, Idaho.—p. 255.
86 Washington State Medical Association. G. M. Horton, Seattle.—p. 259.
87 Neuropsychiatric Problems Encountered by Exemption and Advisory Boards of Interest to General Practitioners. W. House, Portland, Ore.—p. 262.

Oklahoma State Medical Association Journal, Muskogee

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88 Plea for More Careful Treatment of Gonorrhea. C. B. Taylor, Oklahoma City.—p. 281.
89 Acute Gonorrhea in Male. R. T. Edwards, Oklahoma City.—p. 284.
90 Prevention of Venereal Diseases. W. B. Pigg, Henryetta.—p. 291.
91 Symptoms and Diagnosis of Syphilis of Bladder; Report of Cases. W. J. Wallace, Oklahoma City.—p. 297.
92 Radium and Its Application in Surgery. E. S. Lain, Oklahoma City.—p. 299.

Public Health Journal, Toronto

September, 1918, **9**, No. 9

93 Medicosocial Service. J. J. Cameron.—p. 397.
94 Are We Ready for State Health Insurance? J. H. Mullin, Hamilton, Ont.—p. 402.
95 Child and Community. N. E. Mohr, Toronto.—p. 427.
96 School Nursing. W. Read, Halifax.—p. 431.

South Carolina Medical Association Journal, Greenville

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97 Some Aspects of Prostatic Surgery, with Special Reference to Methods of Popular Choice—Preoperative and Postoperative Treatment. E. P. Merritt, Atlanta, Ga.—p. 224.
98 Experience with Use of Mercury Intravenously. W. R. Barron, Columbia.—p. 226.
99 Gallbladder and Duct Surgery. R. L. Sanders, Memphis, Tenn.—p. 227.

Tennessee State Medical Association Journal, Nashville

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100 Eye Requirements for Aviators. R. Fagin, Memphis.—p. 177.
101 Case of Traumatic Stricture of Larynx. B. H. Wood, Nashville.—p. 179.
102 Treatment of Mastoid Disease. J. P. Crawford, Nashville.—p. 181.
103 Low Back Pains. A. G. Nichol, Nashville.—p. 185.
104 Program for Antituberculosis Work. H. H. Shoulders, Nashville.—p. 186.
105 *Complete Intestinal Obstruction from Carcinoma of Sigmoid and Rectum; Cases. W. D. Haggard and W. O. Floyd, Nashville.—p. 190.
106 Goiter. E. H. and J. P. Baird, Dyersburg.—p. 195.

105. Abstracted in THE JOURNAL, May 4, 1918, p. 1330.

FOREIGN

Titles marked with an asterisk (*) are abstracted below. Single case reports and trials of new drugs are usually omitted.

Archives of Radiology and Electrotherapy, London

September, 1918, **23**, No. 4

1 Sequestra in War Injuries. T. L. Bunting.—p. 105.
2 A New Roentgen Tube Centering Device. H. T. George.—p. 114.
3 A New Roentgen Tube Holder with Director for Ray of Normal Incidence. G. G. Campion.—p. 119.
4 Displacement of Auditory Ossicles Shown by Roentgen Rays. R. W. A. Salmond.—p. 125.

necrosis, and there results an intense edema of the subconjunctival tissues with marked congestion, multiple hemorrhages, leukocyte infiltration, and frequently secondary liquefaction necrosis. The depth of the necrosis in the conjunctiva is much less than that in the palpebral epidermis. This difference in degree of escharization can be explained, in part, by the penetration of the hair follicles on the skin surface, and in part by the moistness of the conjunctival surfaces and the lacrimation. A diffuse mild inflammation of the peribulbar tissues occurs, often with marked infiltration of the ocular muscles. No metastatic lesions of the eye could be produced experimentally by applications of mustard gas to other regions of the body, or by subcutaneous or intraperitoneal injections.

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5 Mounting of Symington's Sectional Atlas of Neck, Thorax and Abdomen. A. E. Barclay.—p. 127.

British Medical Journal, London

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6 *Production of Meningococcus Anti-Endotoxin. M. H. Gordon. —p. 335.
7 Value of Roentgen Rays in Treatment of Malignant Diseases of Breast. C. Saberton.—p. 337.
8 *Gunshot Wounds of Knee Joint as seen at Base Hospital. H. H. Hepburn.—p. 338.
9 Some Aspects of Military Ophthalmology. S. H. McKee.—p. 340.
10 Case of Fatal Jaundice. R. A. Veale and B. H. Wedd.—p. 341.
11 Case of Successful Cesarean Section for Eclampsia. E. W. G. Masterman.—p. 342.
12 Treatment of Irritant Gas Poisoning. J. M. Lazenby.—p. 342.
13 *Administration of Anesthetics to Soldiers. A. Mills.—p. 343.

6. **Production of Meningococcus Anti-Endotoxin.**—Multivalent antimeningococcus serum that has given the best results in military cases has been found to be differentiated from serum of less therapeutic value by the fact that the former contains a demonstrable quantity of anti-endotoxins to each of the two commonest types of the meningococcus. Gordon found that anti-endotoxin is elaborated by the rabbit to both the commonest types of the meningococcus. In order to obtain anti-endotoxin, especially in the case of Type 1 meningococcus, it is absolutely essential to avoid over dosage. The antigens that appear to give best results in the rabbit are neither the raw coccus nor autolysates, but (1) a suspension of the dried coccus, and (2) the sensitized raw coccus.

8. **Gunshot Wounds of Knee Joint.**—Fifty consecutive cases of gunshot wound of the knee joint are summarized by Hepburn. He points out that this series does not include those cases in which the synovial membrane was not found to be penetrated, and at the same time commends the practice of early and complete excision of these nonpenetrating wounds, thereby preventing secondary infection of the joint in a large number of cases. It is a rare occurrence today at the base to find suppuration in a knee joint when the notes from a casualty clearing station say "Wound excised, not penetrating." Of the fifty cases under consideration, twenty-five were complicated by demonstrable bony lesion and twenty-five were not. The synovial cavity is stated to have been washed out and closed in twenty-seven cases—in fourteen cases with fracture and in thirteen without fracture. Saline solution is stated to have been employed in six cases, eusol in six, and ether in two. The remainder were not specified. Bipp was introduced into the joint in two cases and flavine in one; all three did well. The foreign bodies were not found, or not looked for, at the casualty clearing station in nine cases. Five of these required removal at the base. Of the remainder, one was left embedded in the femur, the other three being very small and the joints all quiescent.

It was found necessary to reopen the joint in nineteen cases out of fifty. Of these, twelve were cases with fracture, and seven without fracture. A partial arthrectomy was performed on one patient with extensive loss of the condyles of the femur. Subsequent amputation was necessary in six of the nineteen cases—four with and two without fracture. Of the latter, one was amputated for secondary hemorrhage from a separate wound. Two patients died from septicemia, one in each class. Both were suffering from other severe wounds in addition to those of the knee joint.

Repeated aspiration, with or without lavage through a cannula, has not, in Hepburn's hands, given results which warrant the delay in more complete drainage. It is now his custom to aspirate only once, and if the pathologist reports an active infection, to proceed with freer drainage should the accumulation of pus recur. He has found that suppuration occurs much more frequently in the anterior than the posterior portion of the synovial sac. Absolute immobilization, and evenly distributed support under the popliteal region, are extremely important points in the treatment. When pus does form in the popliteus bursa, thorough drainage is very difficult to obtain. The tendency is for the pus to track downward into the leg on the posterior interosseous membrane as well as upward along the femur, with a bad prognosis. Of the nineteen cases in this series which Hepburn drained by lateral incisions, seven developed an abscess in the posterior pouches. Six of these were treated by incision in the popliteal space, and one by an incision in front of the tendon of the adductor magnus. Four of these subsequently required amputation, and one of the four men died.

The offending organism in all cases reopened was the streptococcus, with or without *Staphylococcus albus*. Hepburn uses a small trocar or a spinal needle for aspiration. He now uses the Thomas knee splint, with about 10 degrees of flexion, and without any extension. A foot support is essential. The postoperative treatment is—two hourly injection of half an ounce of eusol into each of the four Carrel tubes, with one thorough daily irrigation for three days. The tubes may be changed daily if they become blocked. At the third daily dressing the tubes are all removed and replaced by two tubes, which lie in the incisions but not within the synovial sac. On the fourth day the last through-and-through irrigation is given to remove any loose débris. From this time onward only superficial tubes and dressings are employed, and the incisions in the synovial sac encouraged to close. They are usually sealed up by lymph on the fifth or sixth day. If, as sometimes happens, pus collects in the popliteal region it must be dealt with. Movement of the joint must not be encouraged too early on account of the great danger of stirring up and liberating infection.

13. **Administration of Anesthetics to Soldiers.**—Mills advocates an ethyl chlorid-ether sequence as being the best method for induction, and has devised a method of using this sequence. A stopcock is fitted to the foot of the bag and this, connected by rubber tubing with an ether bottle and bellows, forms the simple apparatus which he uses in giving the ethyl chlorid-ether vapor sequence.

Journal of State Medicine, London

October, 1918, **26**, No. 10

14 Liverpool's Activities in Regard to Venereal Diseases. E. W. Hope.—p. 289.
15 Educational Propaganda in Relation to Venereal Diseases. C. J. Macalister.—p. 293.
16 Crismer Test for Detection of Foreign Fat in Butter, Lard, etc. A. W. Stewart.—p. 312.

Lancet, London

Sept. 28, 1918, **2**. No. 4961

17 Essential Characteristics of Successful and Unsuccessful Aviators. T. S. Rippon and E. G. Manuel.—p. 411.
18 Chronic Intestinal Stasis. W. A. Lane.—p. 416.
19 Diagnosis and Treatment of Malaria. D. G. Marshall.—p. 417.
20 *Symptomatology and Morbid Anatomy of So-Called "Spanish Influenza." E. R. Hunt.—p. 419.
21 Case of Loose Body in Knee Joint. P. B. Roth.—p. 421.
22 Meningitis Caused by Micrococcus Flavus. J. H. Teacher and A. M. Kennedy.—p. 422.
23 Cases of Cerebrospinal Fever. J. A. Glover.—p. 422.

20. **Morbid Anatomy of So-Called "Spanish Influenza."**—Hunt says that a blood count is of great value in helping to discriminate between the various causes of P. U. O. (pyrexia of unknown origin). The trench fevers are usually accompanied by a moderate leukocytosis. Malaria, malignant endocarditis, scarlet fever, and cerebrospinal fever, as a rule, show a marked leukocytosis. The enteric group is more usually characterized by a leukopenia. In "Spanish influenza" the leukocyte count usually varies between 5,000 and 9,000 per c.mm. Very few cases of influenza show a true relapse, and the occurrence of pyrexia relapsing within a few days in a supposed case of influenza suggests the probability of the case being one of trench fever.

Quarterly Journal of Medicine, Oxford

July, 1918, **11**, No. 44

24 Calcium Content of Blood in Infantile Tetany; Effect of Treatment by Calcium. J. Howland and W. McK. Marriott, Baltimore.—p. 289.
25 *Deficiency Theory of Origin of Beriberi; Report of Forty Cases. F. M. R. Walshe.—p. 320.
26 *Arterial and Venous Blood Pressures in Enteric Group of Fevers. H. F. Marris.—p. 339.
27 Dysentery in Mediterranean Expeditionary Force. P. Bahr and J. G. Willmore.—p. 349.

49. **Treatment of Chronic Osteomyelitis.**—Jean denounces rough handling of the bone, saying that the gouge and chisel are liable to cause remote fissures or at least to deaden the bone tissue and favor production of infection and thrombosis. It is much better to work with an electric drill. When the drill touches a sequester it does not cut into it, but the ear hears the difference in the sound and the hand perceives the contact. Provisional hemostasis is indispensable, and the whole of the bone must be examined. The roentgen negatives taken from front and side must be constantly under the eyes of the operator; roentgenoscopy is not enough to disclose the finer lesions of the osteitis. A head mirror is also indispensable. Curetting is a blind procedure, liable to inoculate sound tissue while neglecting diseased points. He makes no attempt to fill up the cavity, but lines it with the skin loosened up around and drawn down into the cavity and fastened there, then applying a compressing bandage, before arresting the provisional hemostasis. This dressing is removed the fourth or fifth day. If there is still slight infection, he irrigates with Dakin's solution and completes the cure with heliotherapy. If the skin cannot be drawn down to cover the cavity completely, he fills the gap with Reverdin grafts, toward the end of the second week, recommencing a week later the exposures to the sunlight which stimulate the ity of the grafts while continuing the magic effect on the bone lesion and the general condition. By this technic the skin cicatrix is perfect, it is supple and painless. Healing is certain and rapid although the results of this deep cutaneization of the bone, as he calls it, are not esthetic.

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34. **Multiple Disseminated Epitheliomatosis in Workers on Tar.**—Thibierge describes the peculiar dermatosis which develops when the openings of the glands in the skin become obstructed by tar, asphalt or similar substance clogging the pores.

35. **Enlarged Photographs in Forensic Medicine.**—Martin is professor of legal medicine at the University of Lyons, and he here expatiates on the valuable information often to be derived from enlarging a photograph of a firearm wound in criminal cases. The stereoscopic view, enlarged several diameters, brings out details which entirely escape notice under other conditions, or are beyond the pale of the human senses otherwise.

36. **Cerebrospinal Fluid in Typhus.**—Devaux asserts, on the basis of 200 cases, that typhus infection is more decidedly neurotropic than in any other infectious disease. The diffusion and gravity of the lesions in the central nervous system are in marked contrast to the relative integrity of the other organs. The cerebrospinal fluid shows a leukocyte reaction early and constantly, and it is progressive and persists for from two to eight months. During the first week the field shows ten or twelve large lymphocytes, four or five mononuclears, and one polymorphonuclear to every two or three fields. This cytologic picture grows graver for two or three weeks.

Bulletins de la Société Médicale des Hôpitaux, Paris

June 14, 1918, **42**, No. 21

39 Brain Tumor with Cerebral Fluid Draining through Sphenoidal Sinus into Nose. A. Souques.—p. 599.
40 Tardy Epilepsy after Mumps. L.-Lavastine and V. Ballet.—p. 604.
41 *Cerebrospinal Fluid in Sciatica. Sicard and Roger.—p. 611.
42 Abortive Adenolipomatosis. Babonneix and David.—p. 613.
43 Rat-Bite Fever. S. Costa and J. Troisier.—p. 616.

41. **The Spinal Fluid with Sciatica.**—Sicard and Roger warn that every case of persisting sciatica calls for examination of the lumbar puncture fluid. High albumin or cell content or positive Wassermann gives the clue to proper treatment, showing that the case is not one of ordinary medical sciatica.

Paris Médical

July 27, 1918, **8**, No. 30

44 *Heliotherapy of War Wounds. G. Léo and F. Vaucher.—p. 65.
45 *Diagnosis of Contagious Lesions of Syphilis. Quioc.—p. 73.
46 Oscillometer Localization of Cardiac Murmurs. A. Lévy.—p. 74.

44. **Local Heliotherapy for War Wounds.**—Léo and Vaucher report experiences which show that bacteriologic and histologic research confirms the clinical benefit from local sun baths of war wounds. The microscope discloses the rapid disappearance from the wound of the anaerobic bacteria and then of the aerobic. The profuse exudation of lymph is not bactericidal, but its high antitryptic power neutralizes the fermentation activity of the bacteria and leukocytes. Nothing else, except hot air, induces such an incessant afflux of fresh serum. Phagocytosis does not seem to be activated, at least on the surface. After a certain number of hours of insolation, the wound becomes practically sterile. They declare in conclusion that this effect is realized more rapidly by insolation than by any other therapeutic measure, not even excepting hypochlorite solutions. They reiterate that in all climates and at all seasons, when the sun is shining, it emits rays with a positive therapeutic value. Not to utilize them is a waste, greatly to the detriment of the wounded o whose beds the sunlight falls. The dressing should be opene to expose the wound and the window should be opened, glass arrests part of the useful chemical rays, but coarse wi screening is necessary to keep flies away from the woun They do not think it necessary to protect the wound again dust. The exposures are for fifteen minutes to a maximum two hours. The sunlight acts like a drain, the edemato tissues around the wound pouring out the septic fluid in then the droplets becoming visible to the naked eye in about te minutes, and always by the fifteenth or twentieth. They te the patient, "Put your wound there, in the sunshine, an watch how soon it will begin to ooze and the pain go down. They expose the whole limb when possible, or the region o the body involved.

45. **Simplified Technic for Determination of Pale Spiro chete.**—Quioc expatiates on the superior and unfailing advan tages of the Fontana-Tribondeau technic in the early or lat differential diagnosis of syphilis. The organic débris and re corpuscles are partially dissolved while the pale spirochete i shown up clearly and distinct from other spirochetes.

(1) Dissolve cold 1 gm. silver nitrate crystals in 20 c.c. of distille water. Reserve part of the solution, and add to the rest ammonia a little at a time, stirring constantly, until a sepia precipitate is throw down and then disappears anew. The reserved solution is then added fractioned, until there is slight turbidity, persisting during agitation This reagent, sheltered from light, keeps well. Dry the specime carefully, and cover it for thirty seconds, two or three times, accordin to its thickness, with Ruge's solution: 1 c.c. of crystallized aceti acid in 100 c.c. of a 2 per cent. solution of formaldehyd. The hemo globin dissolves. Rinse in alcohol; pass through flame to burn of all traces of alcohol. Cover the specimen with a solution of tannin: 5 gm. of tannin and 1 gm. of glacial phenol in 100 gm. water. Heat till it steams. Let it steam for a minute, then rinse till all trace of the tannin solution is gone. Then dry. Cover with the nitrate solution. Rinse and dry. All the spirochetes take an even deposit of the silver, and look uniformly thicker and extremely distinct. The pale spirochete retains all its special characteristics, showing up dark purple against a transparent background or against the light yellow background of the decolored reds.

Presse Médicale, Paris

Sept. 5, 1918, **26**, No. 49

47 *Meningeal Hemorrhages in War Pathology. G. Guillain.—p. 449.
48 Traumatisms of the Tarsus. F. Masmonteil.—p. 450.
49 *Treatment of Chronic Osteomyelitis. G. Jean.—p. 452.

Sept. 9, 1918, **26**, No. 50

50 *Syphilis of Nervous System. Sicard and Roger.—p. 457.
51 *Colectomy. V. Pauchet.—p. 459.
52 *Serotherapy for Gas Gangrene. Mairesse and Régnier.—p. 461.
53 *Glycuronuria. R. Porak and Texier.—p. 462.
54 *Changes in Blood with General Anesthesia. L. Binet.—p. 463.

Sept. 12, 1918, **26**, No. 51

55 *Treatment of Tetanus. L. Bérard and A. Lumière.—p. 469.
56 Mitral Stenosis and Raynaud's Disease. J. Chalier.—p. 471.
57 *Natural Colorimetric Scale for Wassermann Test. A. Bergeson and E. Normand.—p. 472.

47. **Meningeal Hemorrhages in War Pathology.**—Guillain declares that meningeal hemorrhages play a surprisingly important part in war pathology, especially with skull wounds, and in aviators making a dangerously sudden landing or a fall. If lumbar puncture is not done, the meningeal hemorrhage may escape detection, or symptoms later may retrospectively reveal it. With shell concussion, besides the meningeal hemorrhage there may be bleeding from lungs, nose or stomach. Signs of meningeal hemorrhage include cerebral excitement, with mental confusion, exaggerated tendon reflexes, with bilateral clonus and Babinski, certain contralateral reflexes, and defense reflexes like those in the frog, pupil disturbances such as mydriasis, uneven pupil reactions, disturbance in reaction to light, and massive albuminuria. In some cases, a jaundice tint suggested meningeal hemorrhage even before the lumbar puncture confirmed the assumption. In a number of cases of meningeal hemorrhages, there was an excessively high temperature for several days. This was not due to infection but to some nervous disturbance in the heat production, probably from toxic action by the products generated in the extravasated blood. General anesthesia dilates the vessels and tends to exaggerate the hemorrhage if much of the spinal fluid is withdrawn. Done properly, lumbar puncture has a decided therapeutic value.

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In conclusion they report an instructive case in an American soldier with a scrap of shell in the right scapula region. The projectile was not found at the primary operation, and it seemed to be healing harmlessly in place when, after a month, contracture was noticed in that arm and pain in the muscles of the shoulder and neck. Massage and passive movements were applied but, the symptoms growing worse, the young man was sent to the tetanus service. At once the projectile and sequesters were sought and removed, and the tetanus bacillus was cultivated from them. This patient's condition is still precarious. He was wounded July 15, and was given two antitetanus injections. The first hint of contracture came August 8, but the projectile was not removed till August 20. At the first hint of contracture, the wound should have been cleared out of all foreign bodies. During the twelve day interval the toxins had been elaborated without check.

57. **Colorimetric Scale for Wassermann Reaction.**—Bergeron and Normand extol the advantages of having an additional set of ten tubes for comparison and percentages of the gradation of tints in the Wassermann reaction. The supplementary set of tubes contain varying dilutions in physiologic saline of a 20 per cent. dilution of the original 10 per cent. dilution of 0.2 c.c. of sheep or human red corpuscles. Comparison between the findings of different workers and different laboratories is thus made possible and reliable.

Progrès Médical, Paris

August 3, 1918, **33**, No. 31

58 *Commotion of Spinal Cord. G. Roussy and L. Cornil.—p. 263.
59 Chlorination of Water. P. O. Collins and A. Bernard.—p. 265.
60 Morbid Courage. P. Voivenel.—p. 266.

August 10, 1918, **33**, No. 32

61 Valvular Disease and Fitness for Service. Clerc and Aimé.—p. 271.
62 Chloramin-T in Disinfection of Wounds. Aimes and Sari.—p. 273

August 17, 1918, **33**, No. 33

63 *Artificial Arms and Hands. C. Roederer.—p. 279.
64 Congenital Absence of Right Diaphragm. L. Moreau.—p. 281.
65 *Suicidal Forms of Psychoses. H. Damaye.—p. 284.

58. **Paralysis from Concussion of Spinal Cord.**—Roussy and Cornil analyze five cases, representing different types, to illustrate the necessity for reserving the prognosis at the first examination. Cases apparently of the gravest nature may prove to be the result of merely temporary suspension of function, and gradual recuperation follows. Systematic immobilization, refraining from any operation on the spine, care to ward off bedsores and complications on the part of the lungs, will often lead to a favorable outcome in cases of quadriplegia from concussion of the spinal cord. In three of the cases described signs of return of motor function were detected between the twentieth and twenty-fourth day. The concussion was by contre-coup or indirect contusion. In the two cases with direct contusion of the cord and dislocation of a vertebra, the interval was two and four months. These two men, ten and fourteen months after the wound, present merely simple hemiparesis or traces of hemiplegia, with the Claude-Bernard Horner syndrome. In the ten months case the sphincter and genital derangement still persist.

63. **Working Hands.**—Roederer reviews the present tendencies in the manufacture of artificial hands, simplification of all parts, especially the shoulder piece, buckling instead of lacing, abandonment of the "universal prosthesis," specialization to the extremest limits in the terminal portion, and the discrimination between the *prothèse de forme* and the *prothèse de force*. At the Lyons training school for the disabled, 75 per cent. of the 286 farmers among the 637 one-armed men have returned to agricultural work. Of the 175 factory workers, 15 per cent. had resumed their former trade, and 29 per cent. a similar trade; 9 per cent. had taken up agricultural work

65. **Suicidal Mental Derangement.**—Damaye relates that among the 916 men who have passed through the advanced neuropsychiatric center, there were thirty-three who had to commit suicide. In fifteen of the thirty-three, there were evidences of heart disease, with traces of albumin, as also in seven with melancholia but no attempts at suicide. The tendency to mental derangement was most often manifested in the man's deserting. Malaria plus abuse of alcohol was found in the large majority of these cases. Many of these men are peculiarly susceptible to liquor so that even one glass of wine upsets their balance, and fatigue enhances this susceptibility. Brief summaries are given of each of the suicide cases. The treatment applied to all aimed at disintoxication and reconstitution: iodin, cacodylate, morphin, and daily baths at 37 or 40 C. (104 F.) for half an hour or an hour.

Annali d'Igiene, Rome

July, 1918, **28**, No. 7

66 Biologic and Immunizing Properties of Bacilli of Colon and Typhoid Group. G. Galeotti.—p. 341.
67 Deficient Diets and Disease. G. Volpino.—p. 346. Cont'n.
68 *Berberin in Treatment of Malaria. A. Ilvento.—p. 358.
69 *Treatment of Lymphosporidiosis. G. Alessandrini.—p. 364.

68. **Berberin in Treatment of Malaria.**—Ilvento urges trial on a large scale of decoctions of barbery which is an old household remedy for malaria in Italy. Used in conjunction with quinin, it has given him better results than was obtained with the latter alone.

69. **Tartar Emetic in Treatment of Sporidiosis in Horses.**—Alessandrini reports the cure of over 89 per cent. of 105 horses with cryptococcus farcy (lymphosporidiosis) given intravenous injections of tartar emetic. It also displayed preventive action when the lesions were washed with it and the "buttons" opened. Flies disseminate the germs and may infect sound animals when they alight close to the eyes and nostrils or on excoriations. The flies that get any of the tartar emetic from the lesions or otherwise die promptly. Even in a very weak, sweetened solution it soon kills them.

Chirurgia degli Organi di Movimento, Bologna

August, 1918, **2**, No. 3-4

70 G. Mercuriale, 1530-1606.—p. 259.
71 *Cervical Ribs. I. Scalone.—p. 275.
72 Astragaloscaphoid Dislocation of the Foot. F. Niosi.—p. 307.
73 *Protection of Wounded Nerve. A. Corti.—p. 323.
74 Contracture of Fingers in Dorsal Flexion. U. Pasini.—p. 367.
75 War Pseudocatatonia. V. Neri.—p. 374.
76 Talipes Varus after War Wound. F. Nassetti.—p. 409.
77 *Skin Tunnel for Kinetic Plastics. F. Delitala.—p. 411.
78 Prostheses with Kinetic Plastics. Landini and Cevolani.—p. 417.

71. **Cervical Ribs.**—Scalone reviews the present status of our knowledge of cervical ribs, the differential diagnosis of disturbances from them, and the best mode of treatment. In a personal case described, almost the entire supernumerary rib was resected through a short incision close to the base of the neck at the side. The rib was cut and removed in two parts. The patient was a young soldier, and the cervical rib was adherent to the first regular rib. There had been no disturbance from the unsuspected cervical rib until within the last few months.

73. **Operations on Nerves.**—Corti discusses the various procedures that have been devised to protect the nerve after an operation on it, and describes personal research which has apparently demonstrated that an artery from a dog can serve to protect a wounded nerve and it resists absorption for a long time. In three clinical cases it was found in good condition after 225, 194 and 305 days. Veins are less resistant than arteries for the purpose. The sheet of arterial tissue wrapped around the nerve protects it from invasion by surrounding tissue.

77. **Kinetic Plastics.**—Delitala's photographs show the simple technic for cutting a bridge flap, rolling the sides up to form a tunnel, and then looping around the outside of the tube thus formed the tendons of the chief muscles. The distal ends of the tendons are brought up and each is looped around the belly of the respective muscle, and fastened with

a few stitches. The skin is then sutured over the whole. The handle of an instrument, passed through the tunnel thus [illegible] can then be moved by volitional impulse from those muscles.

Policlinico, Rome

Sept. 1, 1918, **25**, No. 35

79 Tuberculosis in Soldiers. A. Brungnatelli.—p. 821.
80 *Xiphoid Crepitation in Typhoid. F. Bergolli.—p. 823.
81 *Prophylaxis of Malaria. D. Albano.—p. 826.

80. **Xiphoid Crepitation in Typhoid.**—Bergolli reports twelve cases of typhoid in which Galvagni's sign—xiphoid crepitation—was pronounced. Some were acute cases and the liver was generally enlarged, and there were usually symptoms of a reaction on the part of the peritoneum. In all the cases the epigastrium bulged above the level of the xiphoid. The seat of the crepitation is undoubtedly the subcutaneous cellular tissue, and disturbances in the circulation of lymph seem to be the cause.

81. **Prophylaxis of Malaria.**—Albano relates that mosquitoes will not bite where the skin is smeared with petrolatum. He smears all the exposed skin with petrolatum once every day or two, and says that this permits tranquil sleep amid myriads of mosquitoes.

Rivista Critica di Clinica Medica, Florence

Aug. 10, 1918, **19**, No. 32

82 Factitious Edema. G. Garin.—p. 373.

Archivos Latino-Americanos de Pediatria, Buenos Aires

Jan.-Feb., 1918, **12**, No. 1

83 *Serotherapy of Poliomyelitis. M. Acuña and Casaubon.—p. 1.
84 *Stones in Child's Kidney. N. Gurgel.—p. 16.
85 Diphtheria in Three Days' Child. A. F. Puyol.—p. 21.
86 Rheumatismal Mitral and Aortic Insufficiency in Girl of Eight. A. A. Ugon.—p. 28.
87 Rheumatismal Asystoly in Girl of Five. M. F. Langon.—p. 32.
88 *Scurvy in Infant. J. A. Bauza.—p. 40.
89 *Mumps Meningitis. V. Zerbino.—p. 44.
90 *Secondary Pneumococcus Meningitis. L. Solari.—p. 50.
91 *Pneumonia in Twenty-Five Days' Infant. M. A. Ugon.—p. 54.
92 Protection of Children against Tuberculosis. A. Alfaro and V. Blanco.—p. 57.

83. **Serotherapy of Poliomyelitis.**—Acuña and Casaubon report four cases of poliomyelitis in which convalescents' serum was used in treatment. They expatiate on the logical and promising outlook for this form of treatment although their own cases were disappointing, as the disease was in an advanced phase in all, paralysis having been observed for five or seven days before. Four days seems to be the limit and the more recent the convalescence in the donor the more effectual the serum although instances are known of effectual action even after a thirty-two years' interval. In their four cases the intraspinal injection of the serum was borne without apparently the slightest inconvenience. The infants were from 7 to 20 months old, and the amounts injected ranged from 2 to 6 c.c. at a time, to a total of from 7.5 to 38 c.c. The interval since the convalescence had been three, five and eight years and two months.

84. **Kidney Colics in Child.**—The boy of 6 had suffered for three years from colic pains, finally explained by roentgen discovery of two concretions in the pelvis of the left kidney. There never had been any hematuria, pyuria or albuminuria, and the general health was excellent throughout.

88. **Infantile Scorbutus.**—The child was about a year old, and it had been fed almost exclusively for weeks with boiled milk and arrowroot flour.

89. **Mumps Meningitis.**—Zerbino's patient was a boy of 13, and the diagnosis when he entered the hospital had been tuberculous meningitis. After he had been feeling sick for two weeks and lumbar puncture had showed 384 cells per millimeter, including 99 per cent. lymphocytes, he began to improve. A history of mild mumps two weeks before was then elicited. In some cases cited, the meningitis was the first manifesation of the disease.

90. **Pneumococcus Meningitis.**—The boy of 3 had recovered from bronchopneumonia when, a month later, he developed fatal pneumococcus meningitis.

91. **Pneumonia in Infant.**—The nursling was only 18 days old when it developed pneumonia, with defervescence the ninth day and complete recovery, after a brief tardy partial bronchopneumonia in the base of the same lung. Treatment had been with hot baths and 1 c.c. of 5 per cent. camphorated oil.

Cronica Medica, Lima

August, 1918, **35**, No. 662

93 Exophthalmic Goiter in Girl of Sixteen. E. Odriozola.—p. 219.
94 *Treatment of Varicocele. H. H. Torres.—p. 225.
95 Preparation of Sodium Hypobromite. M. A. Velasquez.—p. 235.

94. **Conservative Treatment of Varicocele.**—Torres reports highly favorable results in fourteen cases in which he applied del Valle's conservative method of curing varicocele. He separates the spermatic veins into two bunches and passes a silk ligature around part of the veins in each bunch. The long ends of the silk are then drawn up through an incision in the aponeurosis, 4 cm. long, made 2 cm. inside of the internal pillar. The veins thus drawn up through the aponeurosis are held there while the incision in the aponeurosis is sutured beneath them, except at the corners. These veins thus run over a bridge, materially shortening their extent below, and sustaining the testicle at the proper height, while the circulation is modified to prevent further tendency to varicocele, without a cutting operation. Several illustrations show the details of the technic.

Cronica Medico-Quirurgica, Havana

May, 1918, **44**, No. 5

96 Extreme Photophobia. J. S. Fernandez.—p. 256.
97 *Foreign Body in Intestine. R. de Castro.—p. 265.
98 Irregular Pyrexias in Cuba. A. Silvera.—p. 272.
99 Sneezing: Spontaneous and Induced. V. de Castro.—p. 276.

97. **Disturbance from Foreign Body in Intestine.**—Intense pain in the appendix region, with tenderness at McBurney's point, were the only symptoms. They kept up for three days and then subsided for six years, when the pain returned with agonizing intensity, until the tooth of a comb was passed in the stools. This cleared up the puzzling diagnosis and all the disturbances at one stroke.

Revista de la Asociacion Medica Argentina, Buenos Aires

July, 1918, **29**, No. 164

100 *Gastro-Enterostomy for Simple Ulcer. C. B. Udaonda.—p. 5.
101 History of Hygiene in Argentina. E. R. Coni.—p. 15. Cont'n.
102 *Partial Colectomy. D. Decoud and G. B. Arana.—p. 55.
103 *Angular Pregnancy. C. Mönckeberg.—p. 69.
104 Pelvic Gummatous Cellulitis. M. R. Castex.—p. 84.
105 *Treatment of Inaccessible Fistulas. A. Turenne.—p. 95.
106 Tuberculosis. J. J. Viton.—p. 108. To be continued.

100. **Remote Results of Gastro-Enterostomy for Simple Ulcer.**—Udaonda reports the remote results in twenty-two out of seventy-one operative cases of simple, noncomplicated gastric ulcer followed for from one to four years. Only 27.24 per cent. are free from stomach disturbances. All the others have had the old subjective symptoms return, as severe as before and as rebellious to treatment. The symptoms returned after intervals ranging from three months to two years; the average, between the sixth and tenth months. There has been hematemesis in 16 per cent. and occult blood has been found in over 86 per cent. The gastro-enterostomy opening seems to be working perfectly in all. Only in one case is there suspicion of syphilis, and there is nothing to suggest jejunal ulceration in any case. In his nonoperative cases, fully as good results were obtained with medical treatment alone.

102. **Colectomy.**—Decoud and Arana report two superposable cases in which a tumor compelled resection of part of the ileum and colon. Stereoscopic radiography aided materially in the diagnosis.

103. **Angular Pregnancy.**—Mönckeberg describes the anatomic conditions involved as the fetus develops in the tubal angle just inside the uterus. In diagnosing this site, the hardening of the tumor as the uterus contracts is instructive, also that the tumor is on one side and toward the front, while the round ligament lies outside of the tumor when examined under an anesthetic. The angular pregnancy tumor also

feels soft in comparison to the hard or fluctuating tubal pregnancy tumor. On suspicion of an angular pregnancy, expectancy should be the rule. By the fourth or fifth month the uterus regains its symmetrical outline and the pregnancy runs the usual course. It is better in a dubious case to annoy the patient by examination several times in succession instead of overhasty decision to operate on assumption of a tubal pregnancy.

105. **Inaccessible Vesicovaginal Fistulas.**—Turenne reports gratifying success in two cases of this kind in which he applied the technic described in 1910 by Gray-Ward.

Revista Española de Medicina y Cirugia, Barcelona

September, 1918, **1**, No. 3

107 Nephrolithiasis and Roentgen Examination. R. Lozano and E. Pastor.—p. 109.
108 *Slow Malignant Endocarditis. G. Roqueta.—p. 116.
109 *Improved Histologic Staining Technic. P. del Rio-Hortega.—p. 124.

108. **Slow Malignant Endocarditis.**—Roqueta's patient was a young woman whose father had succumbed to angina pectoris, and whose sister and brother present mitral lesions. She had two attacks of appendicitis in 1917, and the endocarditis followed close on the removal of the appendix, with death in seven months. A colored plate shows the numerous colonies of the *Streptococcus viridans* in pure culture from the blood.

109. **Improved Staining Technic.**—Rio-Hortega gives the details of a method for staining histologic specimens with an ammoniacal solution of silver carbonate, prepared with lithin carbon. [illegible] silver nitrate. The details of structure are shown up, he says, much clearer than with the classic technics. It is particularly useful in amylosis and in study of nerve fibers and tumors.

Revista Medica del Rosario, Argentina

August, 1918, **8**, No. 4

110 Urinary Stones in Children. J. M. Maidagan.—p. 273.
111 Hygiene of the Eyes in School. F. S. Schleisinger.—p. 293.
112 Abdominal Shock. L. Tixier.—p. 318.
113 *Amenorrhea after Roentgen Exposure. Siquot.—p. 322.
114 *Chorea. V. Ortiz.—p. 323.
115 Ankylostomiasis. C. Muniagurria.—p. 325.

113. **Roentgen Amenorrhea.**—A girl of 14, robust and of a good family, swallowed a needle, and was examined for half an hour with the roentgen rays, which entailed a severe dermatitis. She had been menstruating regularly for nearly two years, but since the roentgen exposure there has been no menstruation. The third month she began to have severe headaches and at times abdominal pain, especially in the left flank. Ovarian treatment, mustard foot baths and purgatives, applied at the approximate menstrual dates have given no result to date.

114. **Chorea.**—Ortiz emphasizes the prompt cure under sodium salicylate in the two cases reported.

Revista Medica del Uruguay, Montevideo

July, 1918, **21**, No. 7

116 *Diagnosis of Incipient Tabes. P. Scremini.—p. 345.
117 *Disinsertion of the Mesentery. L. Merola.—p. 366.
118 Blindness from Thyroid Deficiency. J. C. M. Fournier.—p. 382.
119 Primary Hemiplegia. P. E. Nuñez.—p. 395.
120 Favorable Experiences with Thymic Acid in Treatment of Cholelithiasis. J. S. Larraya.—p. 402.

116. **Diagnosis of Incipient and Incomplete Tabes.**—Scremini ascribes decisive importance to the *lumbar puncture* fluid for the diagnosis of tabes, even when the Wassermann reaction is negative. Changes in the cell content, chemical and biologic changes, isolated or alone, reveal the chronic syphilitic meningitis, and suggest impending or established tabes. The diagnosis may thus be possible in the preclinical phase. He insists that search for syphilis should be the routine preliminary in every case of nervous disturbance, whatever its nature. The Argyll Robertson is an almost certain sign of syphilis.

117. **Disinsertion of the Mesentery.**—Merola describes a method of access to the retroperitoneal region which retraces, as it were, the steps of embryonal devel[illegible] illustration shows how this *pan-operatoria retroperitoneal* al *the entire adult mesentery* with the ascending mesocolon half of the transverse mesocolon to be detached, with branches of the superior mesenteric artery—and all this out hemorrhage.

Semana Medica, Buenos Aires

June 13, 1918, **25**, No. 24

121 *Infant Death Rate. U. Fernandez.—p. 657.
122 *Liver Incompetency and Surgery. A. Gutierrez.—p. 661.
123 Guinea-Pigs in Testing for Tubercle Bacilli in Milk. E. I —p. 669.
124 Order of Examination of Respiratory Apparatus. A. Vit p. 670.
125 *Medical School Inspection. E. R. Coni.—p. 672.

121. **Infant Mortality.**—Fernandez states in this address puericulture that the death rate of infants under 2 avera 35 per cent. of the total mortality in all countries. Arg tina with its 36 per thousand natality and 15 per thous general mortality ranks high among nations, but the inf death rate is high, 21 per cent.

122. **Insufficiency of the Liver from Surgical Standpoint** Gutierrez gives at noon a pill of 2 mg. of methylene blue test the functional capacity of the liver. The urine is exa ined at 9 p. m., 7 a. m. and noon. The findings in six ca are listed to show the great value of the information tl derived, in regard to the functioning of the liver, and a guide to the surgeon.

125. **Medical School Inspection in Argentina.**—Coni remai that the Argentine Republic was the first country in La America to introduce hygienic and medical school inspecti This was in 1881, and in 1886 the national board of educati officially appointed two physicians for the purpose, and number has been constantly increasing since. Chile intı duced medical school inspection in 1900, appointing a wom physician as the official school inspector. Dr. S. B. Rodrigı introduced it several years ago in Uruguay. In Brazil t cities of Rio and S. Paulo have had official medical schc inspection since 1912. Coni outlines the next steps to taken for the welfare of the young.

Siglo Medico, Madrid

Aug. 3, 1918, **65**, No. 3373

126 *Enteritis and Colon Bacilli. D. F. Murillo.—p. 609.
127 Experimental Stimulation of Pneumogastric Nerve. M. B. Gar —p. 611. Cont'n.
128 Fatal Hemorrhage a Week after Stab Wound of Spleen. J. Pal car and S. Pascual.—p. 615.
129 Public Health in Spain. C. M. Cortezo.—p. 624.

126. **Acute Enteritis at Madrid.**—Murillo reports a famil epidemic of acute enteritis in which he isolated from t stools bacilli which seemed to be intermediate between t colon bacillus and those of the typhoid group. The tox generated by it was exceptionally virulent, but there we no deaths and the cases were scattered over nine days.

Vida Nueva, Havana

June, 1918, **10**, No. 6

130 Hygiene for Munitions Workers. R. de Castro.—p. 173.

August, 1918, **10**, No. 8

131 *Quinin as Palliative in Cancer. V. Delfino.—p. 226.
132 Artificial Plasmogenesis. I. Castellanos.—p. 230.

131. **Quinin for Cancer.**—Delfino does not report a specific case histories, but expatiates in general terms on t great improvement in malignant disease under systemat deep intramuscular injections of small doses of quinin, we diluted, according to Castaigne's technic. The maligna disease proceeds on its inevitable course, but the cancer los its distressing features, he says, and the patient is imme surably relieved, possibly buoyed up for months with an ill sion of recovery.

Nederlandsch Tijdschrift voor Geneeskunde, Amsterdam

July 27, 1918, **2**, No. 4

133 Industrial Accidents and Free Choice of Physician. J. A. Kort weg.—p. 301.
134 The Co[illegible] Bread Question. E. C. Van Leersum.—p. 317.
[illegible] A. A. G. Land and A. A. S. Sluijterman.—p. 322.
136 Atypical Mumps. C. H. Nijkamp.—p. 323.